

FLORA OF SOUTHERN AFRICA

VOLUME 21

Editor O. A. Leistner



Part 1 Tiliaceae

by H. Wild

Botanical Research Institute
Department of Agriculture
Republic of South Africa

FLORA OF SOUTHERN AFRICA

All contributions should be compiled in accordance with the Guide to Contributors to the Flora of Southern Africa (Compiled by Ross, Leistner & De Winter) which is available from the Librarian, Botanical Research Institute, Private Bag X101, Pretoria 0001.

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FLORA OF SOUTHERN AFRICA

which deals with the territories of

SOUTH AFRICA, CISKEI, TRANSKEI, LESOTHO, SWAZILAND, BOPHUTHA-
TSWANA, SOUTH WEST AFRICA/NAMIBIA, BOTSWANA AND VENDA

VOLUME 21

PART 1 TILIACEAE

by

H. Wild

Edited by

O.A. Leistner

Editorial Committee: B. de Winter, D. J. B. Killick and O. A. Leistner

Botanical Research Institute,
Department of Agriculture

1984

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INTRODUCTION

The Flora of Southern Africa is arranged on the lines of the Engler system. Sequence and numbering of genera are as far as possible in agreement with De Dalla Torre & Harms (Genera Siphonogamarum, 1900–1907). Keys to families are provided in R. A. Dyer's Genera of Southern African Plants.

This part was compiled in accordance with a Guide to Contributors to the Flora of Southern Africa (Ross, Leistner & De Winter, 1977), which is available from the Librarian, Botanical Research Institute, Private Bag X101, Pretoria, 0001.

The following condensed abbreviations for literature references are used:

Burt Davy, Fl. Transv.	Manual of the Flowering Plants and Ferns of the Transvaal and Swaziland, Vol. 1 (1926) and Vol. 2 (1932).
C.F.A.	Conspectus Florae Angolensis
F.C.	Flora Capensis
F.C.B.	Flore du Congo et du Rwanda-Burundi
F.M.	Flora de Moçambique
F.S.W.A.	Prodromus einer Flora von Südwestafrika
F.T.A.	Flora of Tropical Africa
F.T.E.A.	Flora of Tropical East Africa
F.W.T.A.	Flora of West Tropical Africa
F.Z.	Flora Zambeziaca
R. A. Dyer, Gen.	The Genera of Southern African Flowering Plants by R.A. Dyer, Vol. 1 (1975) and Vol. 2 (1976).

Cited voucher specimens are all housed in PRE (National Herbarium, Pretoria).

Vol. 21 of the Flora, of which the present publication is a component, will appear in parts (see p. ix). The number of the part, namely 1, precedes the page number on all pages marked with Arabic numerals. This was done with a view to binding the entire volume, once completed, and to compiling a combined index to all its component parts. When binding the entire volume the pages marked with Roman numerals may be omitted.

PLAN OF FLORA OF SOUTHERN AFRICA

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Part 2: *Hepatophyta*, *Anthocerotophyta*

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Part 5: *Astereae*
Part 6: *Calenduleae*
Part 7: *Inuleae*: Fascicle 1: *Inulinae*
Fascicle 2: *Gnaphaliinae (First part)* (Published 1983). Price R13,70 Overseas: R16,20 Post free.
Part 8: *Heliantheae, Eupatorieae*
Part 9: *Senecioneae*

TILIACEAE

by H. WILD*

Small trees, lianes, shrubs, annual or perennial herbs, often stellately hairy. *Leaves* usually alternate, simple or rarely digitate, entire, toothed, or lobed; stipules paired, usually small and deciduous. *Inflorescence* usually cymose, with the cymes often leaf-opposed, sometimes in corymbs or panicles, mostly axillary, sometimes terminal. *Flowers* regular, usually bisexual. *Sepals* 5 or sometimes 3–4, free or occasionally connate, usually valvate. *Petals* free, equalling the number of sepals and alternating with them, rarely absent, often with a glandular claw or appendage at the base. *Stamens* mostly indefinite, 7–many; often on a raised torus or androgynophore, free or connate at the base, all fertile or the outer sterile; anthers dehiscing longitudinally or by terminal pores. *Ovary* superior, 2–10-locular, with one to many ovules per loculus; style entire or lobed at the apex or the stigmas almost free. *Fruit* a dry or somewhat fleshy drupe or a schizocarp, 2–10-locular or unilocular by abortion, sometimes transversely septate between the seeds; seeds with endosperm.

A large family found throughout the world but especially abundant in the tropical and subtropical regions.

Elaeocarpus serratus L., an Asiatic species, is recorded in cultivation from Durban. *Elaeocarpus* has in the past been considered as a member of the Tiliaceae, but most modern authors would now put it in the Elaeocarpaceae.

- 1 Fruit indehiscent, without bristles, drupaceous, 1–4-lobed 1. **Grewia**
- 1 Fruit usually dehiscent, if indehiscent then densely bristly, a glabrous, hairy or bristly capsule or schizocarp:
 - 2 Flowers white, pinkish or mauve, 4-merous; some stamens sterile with no anthers or, if sterile stamens very few or apparently absent, the filaments nodose ... 3. **Sparrmannia**
 - 2 Flowers yellow, 5-merous, sometimes 4-merous but then capsule pod-like; all the stamens fertile, filaments never nodose:
 - 3 Fruits globose, bristly, spiny or with conical, spine-tipped tubercles; ovules two per locule. 2. **Triumfetta**
 - 3 Fruits usually long and pod-like, rarely ellipsoid or ovoid; ovules more than two per locule or, if only two, then capsule smooth; leaves often tailed at the base ... 4. **Corchorus**

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1. GREWIA

Grewia L., Sp. Pl. 964 (1753); L., Gen. Pl. edn 5: 412 (1754); DC., Prodr. 1: 508 (1824); Harv. in F.C. 1: 224 (1860); Mast. in F.T.A. 1: 242 (1868); Burret in Bot. Jb. 44: 198 (1910); op. cit. 45: 156 (1910); Burtt Davy, Fl. Transv. 1: 253 (1926); Exell & Mendonça, C.F.A. 1: 210 (1951); Hutch. & Dalz., F.W.T.A. edn 2: 301 (1958); Wild in F.Z. 2,1: 37 (1963); Wilczek in F.C.B. 10: 4 (1963); Roessl. in F.S.W.A. 81: 4 (1969); Wild & Gonçalves in F.M. 28: 5 (1969); R. A. Dyer, Gen. 1: 354 (1975). Type species: *G. occidentalis* L.

Shrubs or smallish trees. *Leaves* alternate, simple, serrate, very rarely entire, 3–7 nerved at the base, petiolate; stipules lateral. *Flowers* regular, in terminal or axillary panicles or in leaf-opposed or axillary umbel-like cymes. *Sepals* 5, linear-oblong or linear-spathulate, stellately hairy outside, coloured like the petals within. *Petals* 5, shorter than the sepals, yellow, pink, mauve, purplish or white, mostly with a nectariferous claw at the base. *Stamens* indefinite, free, usually raised on a torus or androgynophore which is short and glabrous or produced above into a pubescent extension. *Ovary* 2–4-locular, entire or 2–4-lobed, with two to many

* Late of the University of Zimbabwe. Text updated by L. E. Codd. Published 1983.

axile ovules in each locule; style longer than the ovary with subulate or flattened lobes or almost entire. *Fruit* a 1–4-lobed drupe with 1–4 pyrenes; mesocarp somewhat fleshy or fibrous; endocarp hard and woody.

A large genus of more than 400 species widely distributed in Africa, Asia and Australia; 26 species are recorded from Southern Africa, though one is of doubtful status.

In common with other treatments of this genus in Africa, such as those by Brenan in the Tanganyika Territory Check-List (1949) and Exell and Mendonça in *Conspectus Florae Angolensis*, I have decided not to follow Burret's later division of the African *Grewia* spp. into the following smaller genera: *Grewia* L. in a more restricted sense, *Microcos* (L.) Wight & Arn. and *Vincentia* Boj. With our material at least, there is no real justification for this division. Further to this, I have not thought it necessary to quote the long list of synonyms thus created by Burret in subdividing the genus in his later work (Burret in Notizbl. bot. Gart. Mus. Berl. 9: 592–880 (1926) and 12: 715 (1935)).

None of our representatives of this genus is of any real commercial value since, although their very hard wood makes good assegai handles or walking sticks, they never grow to sufficient size to make their exploitation worth while. The fruits of most species are edible, but have too little flesh to make them really attractive. However, the large number of species and their wide distribution in all kinds of habitats makes them useful to the ecologist as indicator species. Several species provide useful browsing for livestock and wildlife.

- 1 Inflorescences of terminal panicles; fruit never lobed, pendulous on recurved pedicels; stigma not lobed 1. *G. microthyrsa*
- 1 Inflorescences axillary or terminal, usually in rather umbel-like cymes, single in the axils or rarely in dense heads; stigmas lobed:
 - 2 Inflorescences of dense heads, leaf-opposed and often arising some distance from the node; stigmas laciniately divided; stipules ovate 2. *G. villosa*
 - 2 Inflorescences rather lax, 1–several-flowered, axillary or, if leaf-opposed, arising at the nodes; stipules subulate to lanceolate or oblong:
 - 3 Ovary and fruit entire or 2-lobed; flowers yellow; inflorescences axillary or very rarely leaf-opposed (*G. vernicosa*):
 - 4 Leaves densely and finely whitish tomentose or tomentellous below, often discolorous:
 - 5 Nerves on the underside of the leaves subglabrous or with tufts of long brownish hairs standing out against the whitish indumentum of the interspaces:
 - 6 Nerve interspaces very finely tomentellous: nerves lacking tufts of longer brownish hairs; leaf-blade oblong to obovate 15. *G. inaequilatera*
 - 6 Nerve interspaces tomentose; nerves with tufts of longer brownish hairs; leaf-blade elliptic, ovate-oblong or oblong-elliptic 14. *G. hexamita*
 - 5 Nerves on the underside of the leaves not differentiated in colour, whitish tomentose or tomentellous like the interspaces:
 - 7 Androgynophore produced well beyond the basal glabrous portion (noticeable in fruit as well as in flower); stipules slightly falcate and somewhat auriculate at the base 7. *G. falcistipula*
 - 7 Androgynophore not produced beyond the basal glabrous portion; stipules straight, not auriculate at the base:
 - 8 Leaves symmetric at the base; peduncles commonly 1-flowered, if more than 1-flowered, nerves rather raised and reticulate below 13. *G. flava*
 - 8 Leaves asymmetric at the base; peduncles usually 3-flowered:
 - 9 Leaves elliptic, elliptic-oblong or lanceolate; margin entire or finely serrulate 9. *G. bicolor*
 - 9 Leaves asymmetrically cordate, oblong-ovate to ovate or broadly obovate-oblong; margin serrate:
 - 10 Bracts entire; fruit-lobes more than 4 mm in diam.; leaves 25–90 mm long:
 - 11 Leaf-margin usually irregularly and coarsely serrate; leaf-blade somewhat rugulose above, leathery in texture 10. *G. monticola*
 - 11 Leaf-margin regularly serrate; leaf-blade not rugulose above, thin-textured 11. *G. subspatulata*
 - 10 Bracts narrow, bifid or trifid; fruit-lobes 4 mm in diam.; leaves ca 30 mm long ... 12. *G. hornbyi*
 - 4 Leaves glabrous or variously hairy but if tomentose below then coarsely greyish tomentose and not discolorous:
 - 12 Androgynophore produced well beyond the basal glabrous portion in a densely pubescent extension (noticeable in fruit as well as in flower) 6. *G. caffra*
 - 12 Androgynophore not produced:
 - 13 Fruit deeply 2-lobed, 15 mm in diam. or more; stigma-lobes broad 16. *G. schinzii*
 - 13 Fruit not lobed or only shallowly lobed; stigma-lobes subulate or, if fruit fairly deeply 2-lobed and stigma-lobes broader, then fruits not more than 10 mm in diam.:

- 14 Leaves glabrous or only very sparsely pubescent; pubescence of buds and young stems fine and rather appressed:
 - 15 Leaf-blades broadly ovate, rotound, broadly obovate or rhombic 8. *G. vernicosa*
 - 15 Leaf-blades oblong, elliptic-oblong or lanceolate:
 - 16 Leaf-apex rounded or acute, blade oblong or elliptic-oblong, nerves reticulate; branches cylindric; a low bush of about 1 m tall 4. *G. retinervis*
 - 16 Leaf-apex acute or acuminate, blade lanceolate, nerves not reticulate, spreading shrub with branches becoming 4-angled 5. *G. gracillima*
- 14 Leaves coarsely and harshly pubescent or if glabrescent then buds and young stems coarsely and harshly pubescent:
 - 17 Flowering peduncles normally longer than 10 mm; leaves broadly oblong or almost orbicular 3(b). *G. flavescens* var. *olukondae*
 - 17 Flowering peduncles normally shorter than 10 mm; leaves oblanceolate, obovate or oblong-lanceolate 3(a). *G. flavescens* var. *flavescens*
- 3 Ovary and fruit deeply 4-lobed; flowers white, purplish, pink, or rarely yellow (*G. rogersii*); inflorescences leaf-opposed, rarely axillary (*G. rogersii*):
 - 18 Leaves discolorous, whitish or greyish tomentose or tomentellous below:
 - 19 Flowers yellow; leaves oblong-elliptic or oblong-ovate, up to 70 × 30 mm 18. *G. rogersii*
 - 19 Flowers pink or mauve, rarely white; leaves broadly elliptic, obovate, broadly ovate or rotund, up to 20 × 16 mm 26. *G. robusta*
 - 18 Leaves not discolorous, glabrous to fairly densely pubescent:
 - 20 Inflorescences 1(–3)-flowered; leaves glabrous or slightly pubescent:
 - 21 Flowers white; leaves orbicular to obovate, rounded at the apex and cordate or abruptly cuneate at the base; ovary glabrous or glabrescent; ripe fruits shining and yellowish, 10 mm in diam. 19. *G. tenax*
 - 21 Flowers pinkish, mauve or purple, very rarely white; leaves rhomboid-elliptic to ovate, cuneate to rounded at the base; ovary densely hairy; ripe fruit brownish to purplish black, up to 15 mm in diam.:
 - 22 Leaves relatively thin-textured, 20–40(–50) × 10–30 mm, not glossy above; margin finely crenate-dentate 20. *G. occidentalis*
 - 22 Leaves thick-textured, 40–80 × 20–50 mm, glossy above; margin subentire 21. *G. pondoensis*
 - 20 Inflorescences 2–several-flowered, if flowers occasionally single then leaves coarsely hispid:
 - 23 Inflorescences concentrated at the ends of the branches, mostly more than 3-flowered; petal-lamina narrowly triangular tapering to the apex, 7–13 mm long 17. *G. sulcata*
 - 23 Inflorescences not concentrated at the ends of the branches, 1–3(–4)-flowered; petal-lamina narrowly elliptic or oblong-elliptic, or shortly triangular:
 - 24 Bracts trifid; petal-lamina about 2 mm long and shortly triangular 22. *G. avellana*
 - 24 Bracts entire; petals narrowly elliptic or oblong-elliptic:
 - 25 Leaf-blades exceeding 60 × 25 mm:
 - 26 Leaf-blades oblong-lanceolate to narrowly obovate, 60–150 × 25–60 mm, acute at the apex, thin textured 23. *G. pachycalyx*
 - 26 Leaf-blades broadly ovate or broadly obovate to almost rotound, 80–150 × 70–150 mm, rounded to obtuse at the apex, thick textured 24. *G. lasiocarpa*
 - 25 Leaf-blades up to 35 × 23 mm 25. *G. hispida*

1. *Grewia microthyrsa* K. Schum. ex Burret in Bot. Jb. 45: 163 (1910); Wild in F.Z. 2,1: 40 (1963); Wild & Gonçalves in F.M. 28: 9 (1969); Ross, Fl. Natal 240 (1972); Syntypes: Mozambique, Lourenço Marques, Schlechter 11632 (B†; BM!; Schlechter 11616 (B†; BM!; K!).

Shrub 2–3 m tall with pale grey bark. Leaf-blade 20–55 × 12–25 mm, oblong to oblong-elliptic, apex obtuse, base rounded, margin almost entire or subserrate in the upper half, both sides glabrous or with minute, scattered, stellate hairs, lateral nerves fairly prominent below, in 4–5 pairs, looping within

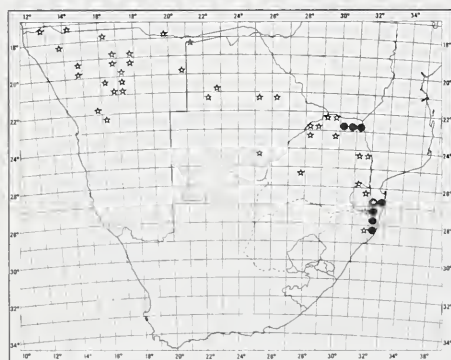
the margin; petiole about 5 mm long, stellate-pubescent; stipules subulate, very caducous. Inflorescences terminal on the branches, in smallish panicles; peduncles about 5 mm long, whitish or brownish tomentellous; pedicels similar, about 2,5 mm long; bracts about 5 mm long, deeply trifid, densely puberulous, very caducous. Buds greyish brown, tomentellous, obovoid. Sepals 6–9 mm long, revolute and hooded in the upper half, slipper-shaped, puberulous within, tomentellous without. Petals about 3 mm long, usually retuse or bifid at the apex, densely puberulent within above the nectary which does not form

a scale-like ledge above. *Androgynophore* 1–1.5 mm tall, glabrous, not produced above. *Ovary* not lobed, glabrous, usually 3-locular and the loculi 3–4-ovuled; style 5 mm long, glabrous; stigma hardly wider than the style. *Fruit* about 13 × 7 mm, pendulous on recurved pedicels, narrowly ovoid, never lobed.

A species of dry bushland or dry mixed woodland at low altitudes in north-eastern Transvaal and northern Natal; also in the southern provinces of Mozambique. Map 1.

Vouchers: Codd 5334; Gersmer 4797; 4976; Junod in TRV 25402.

The only South African representative of section *Microcos* (L.) Wight & Arn.



MAP 1. — ● *Grewia microthyrsa*
 ☆ *Grewia villosa*
 ⊙ both species

2. *Grewia villosa* Willd. in Ges. naturf. Freunde Berl. Neue Schr. 4: 205 (1803); DC., Prodr. 1: 511 (1824); Mast. in F.T.A. 1: 249 (1868); Burt Davy, Fl. Transv. 1: 254 (1926); Codd, Mem. bot. Surv. S. Afr. 26: 118 (1951); Wild in F.Z. 2: 1: 62 (1963); Compton, Fl. Swaziland 56 (1966); Roessl. in F.S.W.A. 81: 9 (1969); Wild & Gonçalves in F.M. 28: 35 (1969); Ross, Fl. Natal 241 (1972). Type: India, Madras, Rottler (B, Herb. Willd.).

Much branched shrub 1–3 m tall; young branchlets with yellowish silky hairs. *Leaf-blade* up to 120 mm in diam., suborbicular to broadly elliptic, apex rounded, slightly cordate at the base, sometimes asymmetric, margin serrate, sparsely pubescent, green and finely reticulate above, grey pubescent or villous below, veins prominent and reticulate; petiole up to 40 mm long, setulose-pubescent;

stipules 5–12 mm long, ovate to broadly oblanceolate, pubescent, submembranous. *Inflorescences* leaf-opposed or frequently arising some distance from the node; peduncles up to 5 mm long, pubescent; pedicels similar, up to 3 mm long, bracts about 7 mm long, ovate, similar to the stipules. *Buds* globose to oblong-globose. *Sepals* 5–9 mm long, linear-lanceolate, silky pubescent outside, slightly pubescent and yellow inside. *Petals* yellow, about half the length of the sepals, oblong or obovate-oblong, with a basal nectariferous claw circumvillous within but not extended above into a narrow ledge, nectary and lamina of about equal length, pubescent behind the nectary and along the mid-line of the lamina. *Androgynophore* up to 0.75 mm long, glabrous, with a more or less membranous, undulate rim. *Ovary* not lobed, densely villous; style about 3 mm long, pubescent, especially towards the base; stigma divided into many lacinate segments. *Fruit* about 15 mm in diam., globose, reddish, shallowly 4-lobed, with small scattered tubercles bearing rather long, caducous, setulose hairs.

Often found in *Acacia* bush or woodland or in mixed *Commiphora-Terminalia* bushland. Widely distributed through the drier parts of Africa from South West Africa/Namibia, Transvaal, Natal and Swaziland northwards and also in the Cape Verde Islands, the Arabian Peninsula and India. Map 1.

Vouchers: Codd 4285; 6111; De Winter 3110; Hutchinson 2680.

The only South African representative of section *Glomeratae* Burtt.

3. *Grewia flavescens* Juss. in Ann. Mus. natn. Hist. nat. 4: 91 (1804); Wild & Gonçalves in F.M. 28: 15 (1969). Type: India, ?Lahaye in Herb. Juss. (P, holo.).

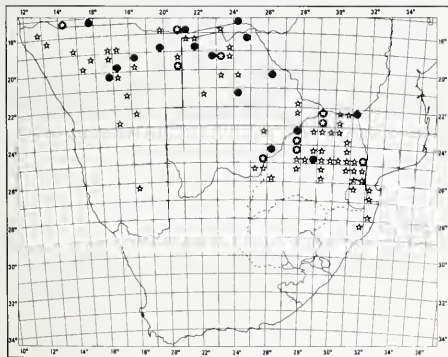
Bush 2–5 m tall; young branches stellate-pubescent, becoming glabrous, older stems four-angled and somewhat sulcate, sometimes scandent. *Leaf-blade* 40–120 × 20–85 mm, oblanceolate, obovate or oblong-lanceolate or occasionally almost orbicular, acute or acuminate at the apex, rounded or subcordate at the base, margins irregularly serrate, harshly pubescent, particularly below; petiole up to 7 mm long but usually shorter, pilose; stipules up to 10 mm long, subulate to oblong-lanceolate, somewhat keeled, pubescent on both sides. *Inflorescences* all axillary, on pubescent peduncles up to 15 mm long; pedicels up to 20 mm long, 2–3 per peduncle, pubescent; bracts about

3 mm long, entire, lanceolate to ovate-lanceolate, pubescent, especially on the back. *Buds* oblong with a slight swelling and then a constriction just above the base. *Sepals* 12–20 mm long, lorate, yellow inside, yellowish tomentose outside. *Petals* yellow, 6–8 × 1.5 mm, narrowly oblong with a nectariferous claw villous on the margins within and at the base outside. *Androgynophore* 1.5–2 mm long, glabrous, not elongated above the node. *Ovary* closely setose-pubescent, entire or slightly 2-lobed; style about 10 mm long, glabrous; stigmas usually subulate. *Fruit* 8–14 × 14–15 mm, depressed globose, sometimes entire but usually shallowly 2- or occasionally 4-lobed, yellowish brown with short, appressed stellate hairs, often mixed with longer stellate hairs, somewhat shining when ripe.

A species of open woodland below about 1 500 m in northern Natal, Swaziland, Transvaal, and South West Africa/Namibia; above that altitude it may be found on termite mounds. Widespread throughout tropical Africa, also in the Arabian Peninsula and India.

Belongs to section *Pluriovulatae* Burret which is characterised by unlobed or only slightly lobed ovary and fruits, 10–20 ovules per loculus and subulate stigmas. A very variable species particularly in the amount of indumentum and the leaf-shape. The stems are used in basket making.

For key to varieties, see key to species.



MAP 2.— ☆ *Grewia flavescens* var. *flavescens*
● *Grewia flavescens* var. *olukondae*
⊙ both varieties

(a) var. *flavescens*.

G. flavescens Juss. in Ann. Mus. natn. Hist. nat. 4: 91 (1804); DC., Prodr. 1: 510 (1824); Burret in Bot. Jb. 45: 168 (1910); Burt Davy, Fl. Transv. 1: 254 (1926); Codd, Mem. bot. Surv. S. Afr. 26: 116 (1951); Wild

in F.Z. 2,1: 46 (1963); Compton, Fl. Swaziland 55 (1965); Roessl. in F.S.W.A. 81: 8 (1969); Wild & Gonçalves in F.M. 28: 16 (1969); Ross, Fl. Natal 240 (1972).

G. aspera Schinz in Bull. Herb. Boissier sér. 2,8: 701 (1908). Type: South West Africa/Namibia, Hereroland, Waterberg, *Dinter* 408 (Z, holo.!).

G. rautanenii Schinz, l.c. (1908). Syntypes: South West Africa/Namibia, Ovambo, Ojuda, *Rautanen* 614 (Z!); Ondonga, Unkuanama, *Rautanen* 615 (Z!).

Leaf-blades oblanceolate, oblong-lanceolate or obovate, usually subtruncate at the base. *Flowering peduncles* usually shorter than 10 mm.

The range of distribution is that given for the species as a whole. Map 2.

Vouchers: *De Winter & Leistner* 5639; *Galpin* 741; *Rodin* 3988.

(b) var. *olukondae* (Schinz) Wild in F.Z. 2,1: 46 (1963); Wild & Gonçalves in F.M. 28: 16 (1969).

G. olukondae Schinz in Bull. Herb. Boissier, sér. 2,8: 701 (1908); Engl. in Bot. Jb. 45: 180 (1910); Burret in Bot. Jb. 45: 166 (1910). Type: South West Africa/Namibia, Amboland, Olukonda, *Schinz* 1114 (Z, holo.!).

Leaf-blades broadly oblong to almost orbicular, rounded or often more or less cordate at the base. *Flowering peduncles* usually more than 10 mm long.

Occurs below 1 500 m in woodland, bushland and thickets in the Transvaal and South West Africa/Namibia. Also in Botswana, Zimbabwe and Zambia. Map 2.

Vouchers: *Codd* 5982; *De Winter* 2819; *Hutchinson* 2669.

4. *Grewia retinervis* Burret in Bot. Jb. 45: 170 (1910), pro parte, quoad specim. *Baum*, excl. specim. *Dinter*; Burt Davy, Fl. Transv. 1: 255 (1926); Wild in F.Z. 2,1: 45 (1963). Type: Angola, Bié, *Baum* 758 (B, holo?; BM!).

G. carpinifolia sensu Szyszyl., Polypet. Thalam. Rehm. 57 (1887).

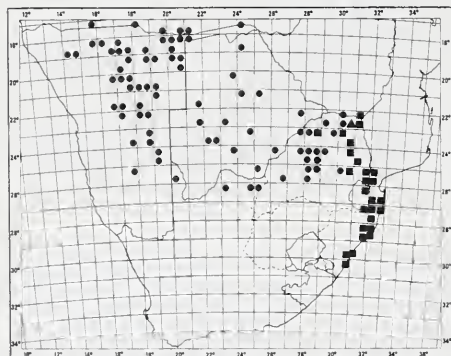
G. deserticola Ulbr. in Bot. Jb. 51: 344 (1914). Type: South West Africa/Namibia, Hereroland, Otjivero, *Dinter* 2742 (B, holo.!).

Small bush 1–2 m tall, usually branching low down; young stems brownish pubescent or glabrescent, older branches somewhat compressed not becoming 4-angled and grooved. *Leaf-blade* 20–50 × 10–28 mm, elliptic-oblong, acute or rounded at the apex, rounded at the base, margins serrate, sparsely pubescent above or glabrous, nerves reticulate on both sides, slightly pubescent below; petiole 1–3 mm long, pubescent; stipules about

2,5 mm long, subulate, pubescent. *Inflorescences* all axillary; peduncles 3–6 mm long, pubescent; pedicels 2–3 together, 2–4 mm long, pubescent; basal bracts about 2 mm long, entire, lanceolate-triangular, pubescent. *Buds* oblong, somewhat sulcate. *Sepals* 6–8 × 1 mm, lorate, appressed pubescent outside, glabrous within. *Petals* yellow, 5–7 × 1,5 mm, narrowly oblong or lorate, with a basal nectariferous claw 1 mm long and circumvillous within. *Androgynophore* 1 mm long, glabrous, not extended above the node, rather cupular at the apex and clasping the ovary base. *Ovary* appressed pubescent, never lobed; style 8–9 mm long, glabrous; stigmas usually 4, subulate. *Fruit* about 8 mm in diam., globose, never lobed, shining, reddish brown, minutely and sparsely stellate-pubescent. Fig. 1: 2.

A species of open woodland and bushland, usually found on sandy soils in the Transvaal, northern Cape, South West Africa/Namibia. It occurs also in Botswana, Zimbabwe, Zambia and southern Angola. Map 3.

Vouchers: *Acocks* 12472; *De Winter* 4273; 4591; *Leistner* 563.



MAP 3.—
● *Grewia retinervis*
▲ *Grewia gracillima*
■ *Grewia caffra*

This species has sometimes been treated as a form of *G. flavescens* Juss. However, the fact that the fruits are always 1-lobed, the leaves almost glabrous and the older branches rounded rather than 4-sided relates this species to *G. carpinifolia* Juss. rather than to *G. flavescens*, if one follows the criteria used by Keay in F.W.T.A. edn 2, 1, 1: 302 (1958) to separate these last two species. Ecologically, as a small bush of dry sandy soils or Kalahari conditions, it is readily separated from *G. carpinifolia*, which is a forest species. Like a number of other species such as *Dichapetalum venenatum* (Hook. f.) Engl., also a plant of the open bushlands and woodlands of the Transvaal, *G. retinervis* may have evolved from a liane-like forest ancestor. Both these plants are most nearly related to other species in the same genera which are forest scramblers or

lianes. For these reasons *G. retinervis* is once more treated as a distinct species and, under our conditions at least, its rather dwarf habit, apart from the other characters mentioned, renders it readily distinguishable from the larger *G. flavescens*. Belongs to section *Pluriovulatae*. The Dinter specimen from S.W.A./Namibia cited by Burret (l.c.) is *G. flavescens*.

5. *Grewia gracillima* Wild in Bolm Soc. broteriana sér. 2,31: 82, t. 1, fig. B. (1957); Wild in F.Z. 2,1: 44 (1963); Wild & Gonçalves in F.M. 28: 13 (1969). Type: Zimbabwe, Ndanga, Chipinda Pools, *Mylne* 42/51 (SRGH, holo.!).

Shrub about 2 m tall which may become scandent if crowded with other trees or bushes; young branches very delicate, sparsely pubescent, soon becoming glabrous, older branches 4-angled. *Leaf-blade* 15–60 × 8–25 mm, lanceolate, apex acute to subacute, base rounded or subcordate, margin serrate or serrate-crenate, glabrous above, very sparsely appressed stellate-pubescent below, especially on the nerves, lateral nerves 4–5; petiole 1–3 mm long, sparsely setulose-pubescent; stipules about 6 mm long, subulate, sparsely setulose. *Inflorescences* all axillary; peduncles 3–10 mm long, 1–3-flowered, slender, sparsely setulose; pedicels similar, 2, 5–6 mm long; basal bracts 1 mm long, minutely pubescent, oblong. *Buds* oblong, slightly wider towards the apex. *Sepals* about 6,5 mm long, narrowly oblong-spathulate, involute towards the apex, pubescent outside, three-nerved, apex somewhat hooded. *Petals* yellow, about half the length of the sepals, often incised at the apex, with a basal nectary which is circumvillous on the margins within with a slight ledge above and glabrous at the back. *Androgynophore* 0,75 mm long, glabrous, barely elongated at the pubescent apex. *Ovary* never lobed, appressed setose; style about 3 mm long, glabrous; stigmas very small, subulate. *Fruit* about 8 mm in diam., globose, yellowish, very sparsely stellate-setulose.

A Soutpansberg species of lower altitude woodland up to 700 m, most commonly found in somewhat protected situations such as stream banks and on rocky hills where vegetation is relatively dense. Also occurs in Zimbabwe and Mozambique. Map 3.

Vouchers: *Codd* 6894; *Schlieben* 7405.

This species is rather difficult to place in Burret's classification in Bot. Jb. 44: 216 (1910). Superficially it appears to be nearest to *G. carpinifolia* Juss. of section *Pluriovulatae* subsection *Apodogynae* Burret but it lacks the shallow hollowing out of the apex of the torus or androgynophore which clasps the base of the ovary in the latter species. Instead there is the slightest suggestion of an

elongation of the androgynophore and the apex is pubescent. Its androgynophore is, therefore, of a type intermediate between those of the two subsections *Apodogynae* Burret and *Podogynae* Burret and in fact this species is in all other respects remarkably near *G. caffra* Meisn. of the *Podogynae*.

6. *Grewia caffra* Meisn. in Hooker, London J. Bot. 2: 53 (1843); Harv. in F.C. 1: 225 (1860); Mast. in F.T.A. 1: 244 (1868); Burret in Bot. Jb. 45: 171 (1910); Burtt Davy, Fl. Transv. 1: 255 (1926); Wild in F.Z. 2,1: 48 (1963); Compton, Fl. Swaziland 55 (1966); Wild & Gonçalves in F.M. 28: 18 (1969); Ross, Fl. Natal 240 (1972). Type: Natal, Port Natal, Krauss 209 (K!).

Scandent many-stemmed shrub; branchlets sparsely setose-pubescent, soon becoming glabrous, older stems quadrangular. *Leaf-blade* 20–50 × 10–25 mm, oblong-ovate to lanceolate, acute to acuminate at the apex, broadly cuneate to rounded at the base, finely serrate or serrulate, glabrous or very sparsely appressed stellate-pubescent on both sides; petiole 2–3 mm long, sparsely setose-pubescent; stipules about 6 mm long, setaceous, very sparsely setulose-pubescent or glabrous. *Inflorescences* all axillary on slender, setulose-pubescent peduncles up to 7 mm long; pedicels similar, 2–3 together, up to 10 mm long. *Buds* oblong-cylindric. *Sepals* 6–9 mm long, linear, finely pubescent on the back, glabrous within. *Petals* slightly shorter than the sepals, yellow, with a basal nectariferous claw circumvillous within, produced into a ledge above and setose-pubescent on the back. *Androgynophore* glabrous below for 1 mm, produced above into a closely pubescent extension about 2 mm long. *Ovary* ovoid, not lobed, setose-pubescent; style about 7 mm long, glabrous; stigma of 4 subulate lobes. *Fruit* 7.5–10 mm in diam., globose, never lobed, very sparsely stellate-pubescent or glabrous.

A species common along the banks of rivers at low altitudes in Transvaal and Natal, either as a thick-forming species or as a scrambler or liane in riverine fringes. Also in Mozambique and Zimbabwe. Map 3.

Vouchers: *Acocks* 10876; 16791; *Obermeyer* sub TRV 30882; *Strey* 4994.

The flowers of this species are erroneously described as purple by Harvey in the Flora Capensis. Belongs to section *Pluriovulatae* Burret subsection *Podogynae* Burret.

7. *Grewia falcistipula* K. Schum. in Warb., Kunene-Samb. Exped. 296 (1903); Burret in Bot. Jb. 45: 172 (1910); Exell &

Mendonça, C.F.A. 1, 2: 216 (1951); Wild in F.Z. 2,1: 48 (1963); Roessl. in F.S.W.A. 81: 4 (1969). Type: Angola, Cubango R., Cueio Mtn, *Baum* 353 (B, holo.†) but see also Cubango R., Cabindere, *Baum* 353 (B†; BM!; COI!; K!).

Shrub with branches spreading from the base, up to 1 m tall; young branches greyish tomentose. *Leaf-blade* 20–75 × 13–40 mm, elliptic, broadly elliptic or ovate, acute at the apex, asymmetrically rounded or subcordate at the base, margins serrate, finely reticulate and sparsely appressed stellately hairy above, densely greyish white tomentellous below; petiole about 5 mm, greyish or greyish brown tomentose; stipules up to 10 mm long, entire, auriculate at the base, subulate above, pubescent, fairly persistent. *Inflorescences* all axillary; peduncles about 10 mm long, tomentellous, pedicels normally three together, about 2 mm long; bracts about 3 mm long, normally bifid or trifid $\frac{1}{2}$ or $\frac{1}{3}$ way, greyish tomentellous. *Buds* oblong. *Sepals* up to 17 mm long, greenish grey, tomentellous on the back, glabrous within, linear-oblong. *Petals* bright yellow, slightly shorter than the sepals, linear, often bifid at the apex, widening into a nectariferous base which is circumvillous within, ledged above and tomentellous on the back. *Androgynophore* with a glabrous base about 1 mm tall, extended above into a closely pubescent column up to 2 mm tall and bearing the stamens at its apex. *Ovary* ovoid, setose, pubescent, not lobed; style 5–6 mm long, pubescent at the base; stigmas about 4, short, subulate. *Fruit* up to 10 mm in diam., never lobed, globose, shortly and sparsely stellate-pubescent.

Often found on Kalahari sand formations and thus frequently found in *Baikiaea plurijuga* woodland or accompanying such species as *Pterocarpus angolensis*, *Diploxychnus condylocarpon* and *Burkea africana*. Fruit edible.

Occurs in the northern part of South West Africa/Namibia and in Angola and Zambia. Map 4.

Vouchers: *De Winter* 3847; *Giess* 9921; *Killick & Leistner* 3055; 3284.

Belongs to section *Pluriovulatae* Burret.

8. *Grewia vernicosa* Schinz in Bull. Herb. Boissier sér. 2,8: 700 (1908); Burret in Bot. Jb. 45: 195 (1910); Burtt Davy, Fl. Transv. 1: 255 (1926). Syntypes: Transvaal, between Shiluvane and Pietersburg, *Junod* 1729 (S!); *Junod* 1757 (S!).

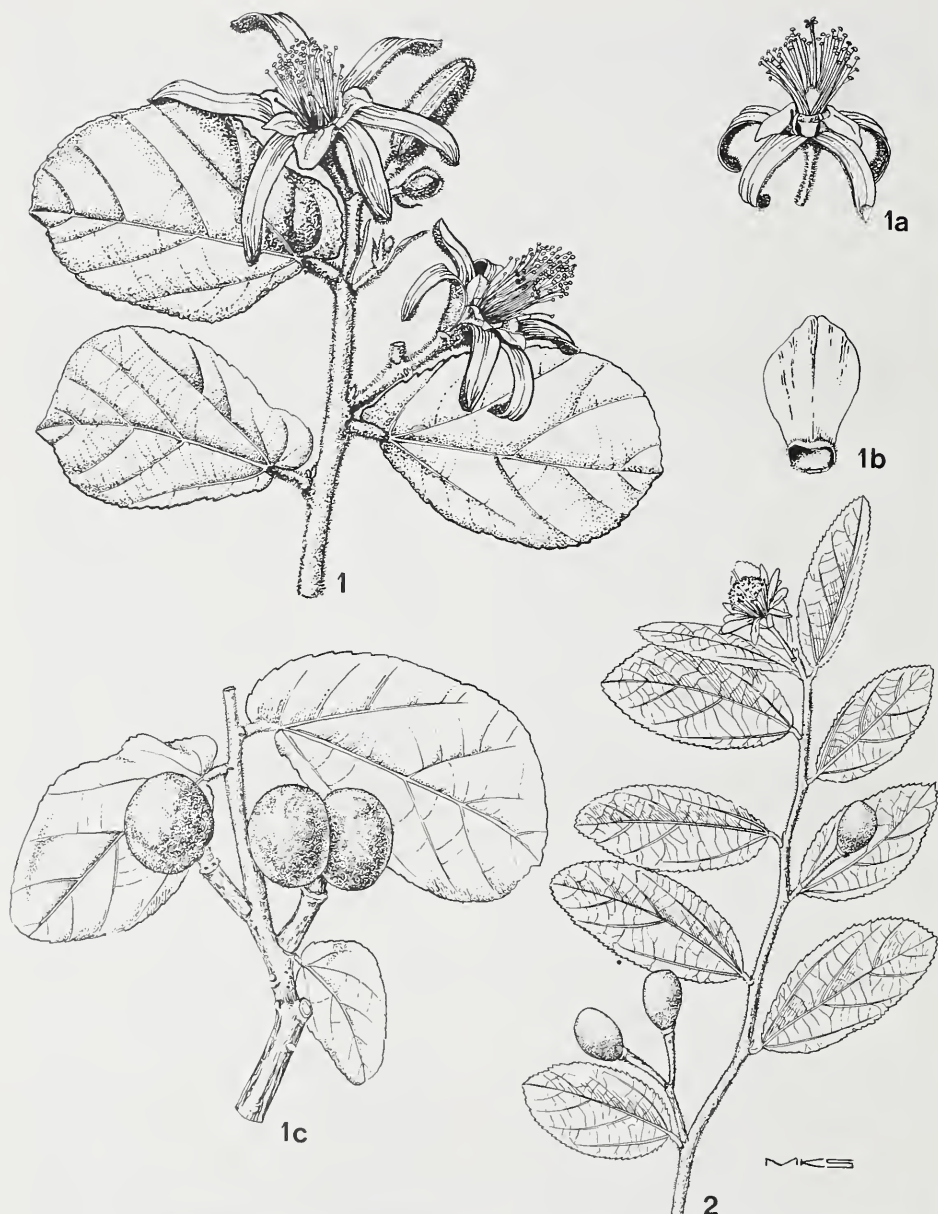


FIG. 1.-1, *Grewia hexamita*, portion of flowering branch, $\times 1$; 1a, flower, front petal removed showing disc, $\times 1$; 1b, petal, $\times 3$; 1c, portion of fruiting branch, $\times 1$ (Werdermann & Oberdieck 1988). 2, *Grewia retinervis*, portion of flowering and fruiting branch, $\times 1$ (Mott 836).

G. populifolia sensu Szyszyl., Polypet. Thalam. Rehm. 57 (1887).

Small shrub about 0.6 m tall; branchlets slender, stellately tomentellous at first but soon becoming glabrous with brown purple bark. *Leaf-blade* up to 23×20 mm, broadly ovate, rotund, broadly obovate or rhombic, apex obtuse or truncate, base rounded, margin crenate or serrate, glabrous or very minutely and sparsely puberulent on the nerves beneath when young, venation reticulate, minutely glandular and when young often rather shining and viscid; petiole up to 5 mm long, slender, shortly pubescent; stipules up to 2 mm long, filiform, puberulous. *Inflorescences* axillary or apparently often opposite the leaves, usually 3-flowered; peduncles up to 5 mm long, slender, puberulent; pedicels similar, up to 5 mm long; bracts similar to the stipules and very caducous. *Sepals* about 5×1.5 mm narrowly oblong, apex acute, densely puberulent outside, glabrous within. *Petals* greenish yellow or greenish white, about $\frac{2}{3}$ the length of the sepals, blade narrowly oblong, apex usually bifid, often pubescent near the base, basal nectariferous claw not wider than the base of the blade, about 1 mm long, pubescent at the sides and on the short upper ledge. *Androgynophore* glabrous for 1 mm below with a tomentose collar at the apex but not extended above the glabrous portion. *Ovary* ellipsoid, clasped by the saucer-like apex of the androgynophore, slightly 2-lobed, glabrous or very minutely papillose; style about 1.5 mm long, stigma-lobes broad. *Fruit*

7 mm in diam. (? immature), minutely glandular-papillose, later glabrescent, 2-lobed or 1-lobed by abortion.

Not so far found outside the Transvaal. A species of mixed bushland or woodland. Map 4.

Vouchers: Acocks 20924; Codd 2283; 6755; Meeuse 10260.

Although this species often appears to have its inflorescences opposite the leaves its ovary and fruit are never deeply 4-lobed, and although Burret placed it in section *Grewia* (= section *Oppositiflorae* Burret) it should be transferred to section *Axillares* Burret.

9. *Grewia bicolor* Juss. in Ann. Mus. natn. Hist. nat. 4: 90, t. 50, fig. 2 (1804); DC., Prodr. 1: 509 (1824); Burret in Bot. Jb. 45: 176 (1910); Wild in F.Z. 2, 1: 49 (1963); Compton, Fl. Swaziland 55 (1966); Roessl. in F.S.W.A. 81: 7 (1969); Wild & Gonçalves in F.M. 28: 19 (1969); Ross, Fl. Natal 240 (1972). Type: Senegal, *Adanson* (P, holo.).

G. miniata Mast. ex Hiern. Cat. Afr. Pl. Welw. 1: 95 (1897); Burt Davy, Fl. Transv. 1: 254 (1926). Type: Angola, Mossamedes, Bumbo, *Welwitsch* 1377 (B!; BM!; COI!; LISU, holo.).

G. dinteri Schinz in Bull. Herb. Boissier sér. 2, 8: 702 (1908). *G. bicolor* Juss. var. *dinteri* (Schinz) Burret in Bot. Jb. 45: 176 (1910). Type: South West Africa/Namibia, Hereroland, Spitzkopjes, *Dinter* 77 (Z, holo.).

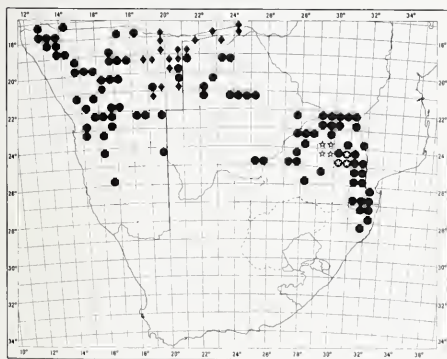
G. grisea N.E. Br. in Kew Bull. 1909: 94 (1909); Burt Davy, l.c. Type: Botswana, Kwebe, *Lugard* 54 (K, holo.).

G. kwebensis N.E. Br., l.c. 95 (1909); Burt Davy, l.c.; Codd, Mem. bot. Surv. S. Afr. 26: 116 (1951). Type: Botswana, Kwebe, *Lugard* 92 (K, holo.).

G. mossambicensis Burret, l.c. 178 (1910); Burt Davy, l.c. in syn. Type: Mozambique, Ressano Garcia, *Schlechter* 11930 (B, holo.; BM!; K!).

G. disticha Dinter & Burret, l.c. 178 (1910). Type: South West Africa/Namibia, Okahandja, Waldau, *Dinter* 438 (B, holo.; K!; Z!).

Shrub or occasionally a moderate sized tree up to 9 m tall; in large specimens the bark is dark grey, deeply fissured longitudinally and exfoliates in long strips, in smaller specimens the bark is grey and smooth; young branches grey or brown tomentellous. *Leaf-blade* $15-70 \times 13-20$ mm, elliptic, elliptic-oblong or lanceolate, acute or rounded at the apex, rounded, subcordate or broadly cuneate at the base, margins finely serrate, sometimes almost entire, glabrous and green to very shortly greenish tomentellous above, shortly and densely white tomentose below; petiole about 2 mm, rarely up to 4 mm; stipules about 6 mm long, linear or subulate, grey or brownish tomentellous. *Inflorescences* all axillary; peduncles 5–10 mm long, brownish



MAP 4.— ◆ *Grewia falcistipula*
 ☆ *Grewia vernicosa*
 ● *Grewia bicolor*
 ⊙ *Grewia bicolor* and *G. vernicosa*

or grey tomentellous; pedicels similar, 2–3 together, 3–10 mm long; bracts similar to the stipules, about 4 mm long, caducous. *Buds* oblong-ovoid. *Sepals* up to 12 mm long, linear-oblong or spatulate-oblong, slightly hooded at the apex, grey or brownish green tomentellous outside, yellow and glabrous inside. *Petals* bright yellow, $\frac{2}{3}$ – $\frac{3}{4}$ the length of the sepals, linear-oblong, sometimes bidentate at the apex, with a basal nectariferous claw circumvillous within and glabrous on the back with a ledge above, or with the nectary entirely lacking. *Androgynophore* with a glabrous basal portion up to 1 mm tall or completely absent. In the latter case the ovary is almost sessile on a short pubescent cushion carrying the anthers. *Ovary* shortly stellate-pubescent, shallowly 2-lobed or 1-lobed with an eccentric style by abortion of one loculus; style about 4 mm long; glabrous, stigma-lobes about 4, broad and flattened. *Fruit* deeply divided into 2 globose lobes, each about 6 mm diam. or 1-lobed, sparsely stellate-pubescent, finally purple-black.

Widespread from Swaziland, Zululand, Transvaal and South West Africa/Namibia to Ethiopia and West Africa; also in the Arabian Peninsula and India. Map 4.

On the whole this species prefers the drier types of deciduous woodland but does penetrate areas with an annual rainfall above 600 mm in special locations such as termite mounds. It is often associated with *Colophospermum mopane* but is also found in many other types of mixed woodland.

Vouchers: *Codd* 6009; 6612; *De Winter* 2674; 2818; *Rogers* 12879.

The wood of larger specimens is used for making axe-handles and walking sticks. The fruit is edible.

This is an extremely variable species and this may, at least partly, be due to the fact that it hybridises freely with *G. monticola* (see there (no. 10) and under *G. subspatulata* – no. 11) particularly in Botswana, Zimbabwe, Transvaal and southern Mozambique. *G. disticha*, which has been included here, also appears to be a hybrid with *G. monticola*.

Belongs to section *Axulares*.

The British Museum sheet of *Dinter* 438 is not typical *G. bicolor* but was probably taken from a different bush than the sheet bearing this number at Kew. It is near *G. monticola* but shows some characters (membranous leaves and rather small serrations) of *G. bicolor* and is almost certainly a hybrid.

10. *Grewia monticola* Sond. in *Linnaea* 23: 20 (1850); Harv. in *F.C.* 1: 226 (1860); Burret in *Bot. Jb.* 45: 179 (1910); Burret Davy, *Fl. Transv.* 1: 254 (1926); Codd, *Mem. bot. Surv. S. Afr.* 26: 116 (1951); Wild in *F.Z.* 2, 1: 50 (1963); Compton, *Fl. Swaziland* 55

(1966); Wild & Gonçalves in *F.M.* 28: 20 (1969); Ross, *Fl. Natal* 241 (1972). Syntypes: Transvaal, Magaliesberg, *Burke* (K!; PRE!); *Zeyher* (K!).

G. discolor sensu Harv. in *F.C.* 1: 254 (1860).

G. pilosa sensu Szyszyl., *Polypet. Thalam.* Rehm. 58 (1887), pro parte.

G. cordata N.E. Br. in *Kew Bull.* 1909: 96 (1909). Type: Botswana, Kwebe Hills, *Lugard* 102 (K, holo.!).

Shrub or small tree up to 5 m tall; young branches densely ferruginously tomentose. *Leaf-blade* 25–90 × 10–50 mm, obliquely elliptic-oblong to ovate, acute at the apex, asymmetrically cordate or rounded at the base, margin irregularly serrate, sparsely pubescent or glabrous and somewhat rugose above, densely white tomentose below; petiole 2–5 mm long, ferruginously tomentose; stipules about 8 mm long, linear-lanceolate, apiculate. *Inflorescences* all axillary; peduncles often 2–3 together in one axil, up to 10 mm long, ferruginously tomentose; pedicels about 3 per peduncle, about 5 mm long, ferruginously tomentose; bracts about 5 mm long, linear to linear-lanceolate, ferruginously tomentose. *Buds* ovoid or ovoid-oblong. *Sepals* about 10 mm long, ferruginously tomentose outside, glabrous and yellow inside, narrowly oblong. *Petals* bright yellow, $\frac{1}{2}$ – $\frac{3}{4}$ the length of the sepals, oblong, narrowly obovate or ovate, often bidentate at the apex, either with a basal nectariferous claw, which is circumvillous within, ledged above and glabrous on the back, or with the gland entirely lacking. *Androgynophore* 1 mm tall, glabrous but villous at the apex, producing a cushion that bears the stamens or with the basal glabrous portion lacking in specimens with no nectaries. *Ovary* villous, shallowly 2-lobed; style about 4 mm long, glabrous, with broad, flattened stigma-lobes. *Fruit* either deeply 2-lobed or 1-lobed by abortion of one loculus, each lobe about 8 mm in diam., setulose-pubescent, yellowish when ripe.

A species of open woodland and bushland in Transvaal, Natal and South West Africa/Namibia. Also in Botswana, Zimbabwe, Zambia, Mozambique and Tanzania. Map 5.

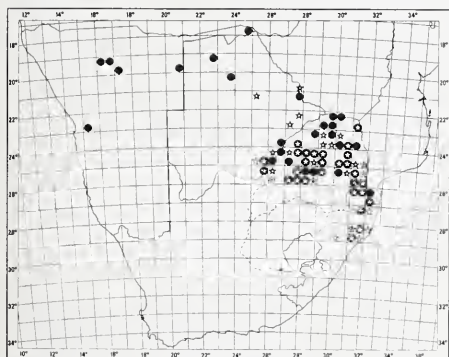
Vouchers: *Acoks* 13929; 15337; *Codd* 758; 934; *Pegler* 2007.

Like *G. bicolor* (no. 9) this is a very variable species, possibly because a whole range of hybrids seems to exist between these two species and it is most difficult to deal with them in a conventional taxonomic manner. (See also under *G. subspatulata* – no. 11).

Mrs. Lugard, who collected the type specimens of *G. cordata*, *G. kwebensis* and *G. grisea* in Botswana (all described as distinct species by N.E. Brown) remarked on the label accompanying the type of *G. cordata* that every hybrid seemed to exist in the Kwebe Hills between this species and *G. bicolor*. This was in 1898 and her comment evidently received little attention at the time. Now that much more material has been collected it is more difficult than ever to explain this complex of forms in any other way and all the above named species, as Mrs. Lugard thought, seem to form part of a hybrid series. (See notes under *G. bicolor*—no. 9).

As in *G. bicolor*, forms lacking the glabrous torus or androgynophore are frequent. In this species both forms seem about equally common. A galling of the fruits in *G. monticola* causes them to develop a characteristic brown woolly appearance which, if not recognised as a gall, could easily lead one into assuming that a distinct species was involved.

Belongs to section *Axillares*.



MAP 5.— ☆ *Grewia monticola*
● *Grewia subspathulata*
⊙ both species

11. *Grewia subspathulata* N.E. Br. in Kew Bull. 1909: 96 (1909); Wild in F.Z. 2,1: 51 (1963); Compton, Fl. Swaziland 56 (1966); Ross, Fl. Natal 241 (1972). Type: Botswana, Ngamiland, Kwebe Hills, Lugard 92a (K, holo.).

G. pilosa sensu Szyszyl., Polypet. Thalam. Rehm. 58 (1887), pro parte.

This species has a rather greyish, short pubescence like that of *G. bicolor* (no. 9) but a leaf-shape quite unlike the elliptic-oblong or lanceolate leaves of that species and agreeing instead with *G. monticola* (no. 10). Its leaves are asymmetrically cordate and oblong-ovate to ovate, sometimes broadest in the upper half. The leaf-texture is not so thin as in *G. bicolor*, nor so leathery as in *G. monticola*. In all respects it seems morphologically to be

about halfway between *G. monticola* and *G. bicolor*.

Very common in Transvaal, Natal, Swaziland and South West Africa/Namibia. Also in Botswana, Zimbabwe, Zambia and Malawi. Map 5.

Vouchers: Acocks 8807; Codd 4792; 6369; 6760; Gerstner 5867.

It is suggested that this species may be of hybrid origin having *G. bicolor* and *G. monticola* as parents; it is known throughout the common range of these two species except for Mozambique and does not occur beyond it. It is apparently fertile but morphologically intermediate between these two species. The only other way to deal with this problem would be to consider the whole complex, including both *G. bicolor* and *G. monticola*, as one species under *G. bicolor*, the oldest name. These two species, however, are so different that even the most ardent lump-er would hesitate to unite them and, as the evidence for hybridisation is so strong, the present treatment is felt to be more logical. This is not proof of the hypothesis, however, which must await the outcome of breeding experiments which in woody species such as these will take some years to carry out. Meanwhile we may retain the name *G. subspathulata* as a provisional measure, without indicating definitely, in the absence of proof, that we are dealing with a hybrid.

I have not been able to see the type of *G. rubescens* Burret in Bot. Jb. 45: 181, fig. L, 1910 (Seiner 15) and it is probably destroyed. It was collected near the Serue stream in the Northern Cape and judging by the description it belongs to this same hybrid complex and should probably be united with *G. subspathulata*. It is one of the forms common in *G. bicolor* and *G. monticola* with the basal glabrous portion of its androgynophore lacking. Belongs to section *Axillares*.

12. *Grewia hornbyi* Wild in Bolm Soc. broteriana sér. 2, 31: 84 (1957); in F.Z. 2,1: 52 (1963); Wild & Gonçalves in F.M. 28: 21 (1969). Type: Mozambique, River Save, Hornby 2497.

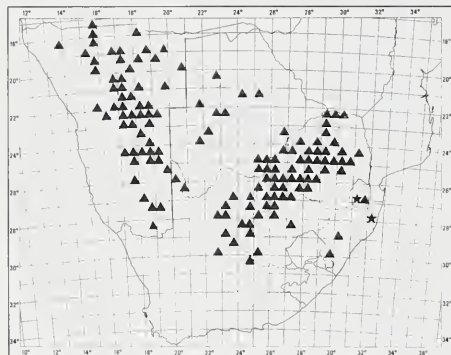
Shrub 2–4 m tall, branching from the base; young branches with a short white to brownish tomentum. Leaf-blade 15–35 × 8–20 mm, oblong-elliptic to oblong-ovate, sparsely stellate-pubescent to glabrous and shiny above, densely whitish-tomentose below, with small tufts of brownish hairs on the rather prominent nerves, apex obtuse, base obliquely subcordate or rounded; petiole 2–3 mm long, stellate-tomentose; stipules 3–4 mm long, subulate. Inflorescence axillary; peduncles 10–15 mm long, stellate-tomentose; pedicels 2–4 mm from apex of peduncle, 3–5 mm long; bracts 3–4 mm long, deeply trifid or bifid, narrow; flower-buds oblong, sulcate. Sepals 9–10 mm long, linear, 3-nerved, tomentellous outside, yellow and glabrous within. Petals yellow 4–4.5 × 1.5–2 mm, oblong-obovate, shortly 2-dentate at the apex, with a

nectariferous claw, circumvillous within and ledged above *Androgynophore* up to 1.5 mm long, glabrous except for a villous apex. *Ovary* shallowly 2-lobed, villous; style about 7 mm long, glabrous; stigma-lobes 4–5, broad. *Fruit* globose or deeply two lobed, lobes about 4 mm in diam., yellowish when ripe, sparsely setulose-pubescent.

Recorded from northern Natal; also in Mozambique. Map 6.

Vouchers: Guy 88; Ross & Moll 1803.

Related to *G. monticola* (no. 10) but has smaller leaves and fruits. The narrow bracts are 2–3-fid but are shed early and so are not present in fruiting specimens.



MAP 6.— ☆ *Grewia hornbyi*
▲ *Grewia flava*

13. *Grewia flava* DC., Cat. Hort. Monsp. 113 (1813); Prodr. 1: 509 (1824); Harv. in F.C. 1: 225 (1860) Sim, For. Fl. Cape Col. 148, t. 15 (1907); Burret in Bot. Jb. 45: 179 (1910); Burt Davy, Fl. Transv. 1: 254 (1926); Letty, Wild Flow. Transv. 209, t. 104 (1962); Wild in F.Z. 2.1: 52 (1963); Compton, Fl. Swaziland 55 (1966); Roessl. in F.S.W.A. 81: 7 (1969); Ross, Fl. Natal 240 (1972). Type: a cultivated specimen of South African origin (MPU, holo.).

G. cana Sond. in Linnæa 23: 20 (1850); Harv., l.c. 225 (1860). Syntypes: Transvaal, Magaliesberg, Burke (K!); Zeyher (K!).

G. hermannioides Harv., l.c. 226 (1860). Type: Transvaal, Magaliesberg, Burke (K, holo.).

G. bicolor var. *dinteri* sensu Burret in Bot. Jb. 45: 177 (1910), pro parte quoad specim. *Dinter* 108.

Compact shrub about 2 m tall; young branchlets greyish or greyish brown, tomentellous; older branches dark purplish black. *Leaf-blade* 14–70 × 7.5–25 mm, elliptic or

oblanceolate, rounded at the apex, cuneate and equal-sided at the base, margin finely serrulate to dentate, very finely and closely tomentellous above, rarely glabrescent, somewhat paler and more densely tomentellous below, venation fairly prominent and reticulate; petiole about 2 mm long, tomentellous; stipules about 5 mm long, subulate, tomentellous. *Inflorescences* all axillary; peduncles 7.5–10 mm long, tomentellous; pedicels normally 1 per peduncle, up to 10 mm long, tomentellous; basal bracts 3–4 mm long, very caducous, subulate, tomentellous. *Buds* obovoid, slightly sulcate. *Sepals* about 8 mm long, rarely up to 14 mm long, linear-lanceolate to linear-oblong, greenish grey tomentellous without, yellow and glabrous within, 3-nerved. *Petals* yellow, about $\frac{2}{3}$ the length of the sepals, linear-oblong to oblanceolate, with a basal nectariferous claw circumvillous within, ledged above and sparsely pilose outside. *Androgynophore* about 1 mm tall, glabrous except at the apex, not extended above the node. *Ovary* villous, shallowly 2-lobed or 1-lobed by abortion, when the style is eccentrically placed on the ovary; style about 4 mm long, glabrous, with flattened, broad, stigma-lobes. *Fruit* about 8 mm in diam., globose or bilobed-globose, sparsely setulose, glabrescent, reddish when ripe.

A species of the drier types of deciduous woodland and bushland in Transvaal, Orange Free State, northern Cape and South West Africa/Namibia, very rare in Natal. Also in Botswana and Zimbabwe. In the Transvaal the fruits are used for making an intoxicating drink and the tough bark for basket making. The ripe fruit is edible. Map 6.

Vouchers: Bolus 6401; Mogg 14629; Zeyher 144.

The great majority of the available material of this species has 1-flowered peduncles but specimens with 2- and even 3-flowered peduncles occur, i.e. the type of *G. hermannioides*. In spite of this fact Burret considered *G. hermannioides* a synonym of *G. flava* and this view is followed here, but with such material the separation of *G. flava* from *G. bicolor* (no. 9) presents some difficulty. In these cases the coarser texture of the leaves, the more prominent lateral nerves, the reticulation of the tertiary nerves and above all the symmetrically cuneate leaf-bases can be used to separate *G. flava* from *G. bicolor*.

Belongs to section *Axillares*.

14. *Grewia hexamita* Burret in Bot. Jb. 45: 184 (1910); Burt Davy, Fl. Transv. 1: 254 (1926); Wild in F.Z. 2.1: 55 (1963); Compton, Fl. Swaziland 55 (1966); Wild & Gonçalves in F.M. 28: 25 (1969); Ross, Fl. Natal 240 (1972). Type: Transvaal, Komatipoort, Schlechter 11780 (B, holo.; K!).

G. messinica Burt Davy & Greenway in Burt Davy, tom. cit. 41 (1926); Codd, Mem. bot. Surv. S. Afr. 26: 116 (1951). Type: Transvaal, Messina, Rogers 21225 (K, holo.!).

G. schweickerdtii Burret in Bothalia 3: 244 (1937). Type: Transvaal, Soutpansberg, Obermeyer, Schweickerdt & Verdoorn 120 (PRE, holo.!).

G. rhytidophylla sensu Burt Davy, l.c.

Shrub from 2–5 m tall; young branches ferruginously woolly, older branches with reddish brown bark and pale lenticels. *Leaf-blade* 30–100 × 25–60 mm, elliptic to oblong-elliptic, rounded or acute at the apex, asymetrically cordate at the base, margin serrate, somewhat revolute, glabrous and somewhat rugose above, rather shining, nerves impressed, very densely pale yellowish tomentose below, nerves sometimes less hairy and brownish; petiole 2–3 mm long, or rarely up to 6 mm, woolly tomentose at first. *Inflorescences* all axillary on tomentose peduncles 5–10 mm long; pedicels 2–3 together, tomentose, about 5 mm long; bracts up to 5 mm long, ovate to lanceolate, glabrous inside, pubescent outside. *Buds* oblong-ovoid. *Sepals* 18–26 mm long, linear-oblong, golden brown tomentose on the back, glabrous and yellow within. *Petals* with a suborbicular blade up to 7 mm in diam. with a basal nectariferous claw up to 2 mm tall, shortly ledged above, circumvillous on the inner margin and pilose at the back. *Androgynophore* with a very stout, glabrous lower portion up to 2 mm tall, produced into a pilose upper portion up to 2 mm tall. *Ovary* 2-lobed or 1-lobed by abortion, silky villous; style up to 10 mm long, glabrous; stigma-lobes about 4, rounded and dilated. *Fruit* deeply divided into two globose lobes, or 1-lobed, each lobe up to 20 mm in diam., pilose, reddish, shining. Fig. 1: 1.

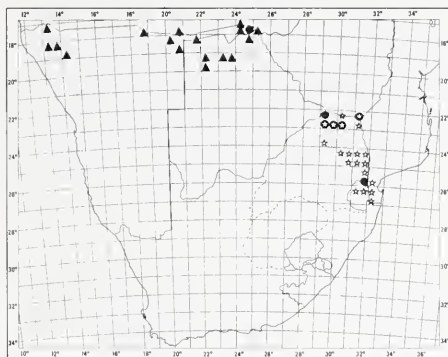
A common species of deciduous bushland in the valleys of the Komati and the Limpopo Rivers in Transvaal, Mozambique and Zimbabwe. Also recorded from Swaziland and Zululand. Map 7.

Vouchers: Codd & De Winter 5005; Compton 29461; 30190; Gerstner 5712.

A very fine species with large handsome flowers.

Belongs to section *Axillares*.

15. *Grewia inaequilatera* Garcke in Peters, Reise Mossamb. Bot. 1: 134 (1861); Mast. in F.T.A. 1: 245 (1868); Burret in Bot. Jb. 45: 183 (1910); Burt Davy, Fl. Transv. 1: 255 (1926); Wild in F.Z. 2.1: 54 (1963); Wild & Gonçalves in F.M. 28: 23 (1969). Type: Mozambique, Sena, Peters 28 (B, holo.†; K!).



MAP 7.— ☆ *Grewia hexamita*
● *Grewia inaequilatera*
⊙ *Grewia inaequilatera* and *G. hexamita*
▲ *Grewia schinzii*

Shrub or small tree up to 7 m tall with spreading or scandent branches; young branchlets stellate-pilose, soon becoming brown and glabrous, older branches pale grey. *Leaf-blade* 50–180 × 25–75 mm oblong to oblong-obovate, acute or abruptly acuminate at the apex, rounded and markedly asymmetric at the base, margin serrate, less so towards the base, green and glabrous above, with a fine white or greyish tomentum in the nerve interspaces below, nerves reticulate and sparsely hispid; petiole up to 10 mm long with a tufted stellate pubescence, widening somewhat at the base; stipules 6 mm long with a 2.5 mm long apiculus, semicircular, greyish tomentose, very caducous, and present only in bud. *Inflorescences* always axillary; peduncles up to 10 mm long with scattered tufts of brown stellate hairs; pedicels similar, 2–3 together, about 6 mm long; bracts about 5 mm long, obovate to oblong, stellate-pubescent. *Buds* ellipsoid. *Sepals* about 16 mm long, linear-oblong, with tufted stellate hairs outside, bright yellow and glabrous inside. *Petals* yellow, 7.5 mm long, suborbicular to very broadly obovate, margins slightly undulate with a basal nectariferous claw less than 1 mm long (very small for the genus), pubescent all over its surface within, ledged above, glabrous on the back. *Androgynophore* about 5 mm tall, glabrous but with tufts of hair at its base. *Stamens* very numerous, about 4-seriate. *Ovary* 2-lobed, pubescent; style about 7 mm long, glabrous; stigma with about 4 broad lobes. *Fruit* divided almost to the peduncle into 2

globose lobes, each about 13 mm in diam., yellow when ripe, very sparsely stellate-pubescent.

A species of low altitude (subtropical) river valleys in Transvaal. Also in Zimbabwe, Malawi and Mozambique; either a thicket-forming species on fertile alluvial soils, or scrambling in riverine fringes, or in deciduous bushland. Fruit edible. Map 7.

Vouchers: *Acocks* 16792; *Codd* 5398; 7779.

Belongs to section *Axillares*.

16. *Grewia schinzii* K. Schum. in Bot. Jb. 15: 124 (1892); Burret in Bot. Jb. 45: 183 (1910); Wild in F.Z. 2.1: 55 (1963); Roessl. in F.S.W.A. 81: 8 (1963). Type: South West Africa/Namibia, Ovambo, *Schinz* 393 (Z, holo.).

G. pinacostigma K. Schum. in Warb., Kunene-Samb. Exped. 298 (1903). Type: Angola, Kavango, *Baum* 420.

Shrub or small tree, branching from the base as a rule, main stems up to about 120 mm in diam., young branches ferruginously tomentose, glabrous with age and becoming brown with pale lenticels; crown rounded. *Leaf-blade* 40–140 × 25–90 mm, obliquely oblong to broadly obovate-oblong, apex acute, obtuse or broadly rounded, base asymmetrically rounded or subcordate, margin coarsely and irregularly serrate, green and shortly stellate-tomentose above, densely greyish brown tomentose below, lateral nerves in about 4 pairs; petiole up to 10 mm long, ferruginously hairy; stipules about 6 mm long, obliquely lanceolate-subulate. *Inflorescences* all axillary, with densely ferruginous-tomentose peduncles up to 15 mm long; pedicels 2–3 together, up to 5 mm long, ferruginously tomentose; bracts about 5 mm long, entire, oblong-lanceolate, ferruginously tomentose on the back, almost glabrous within. *Buds* oblong, slightly sulcate. *Sepals* 10–14 mm long, narrowly oblong, with a tufted stellate tomentum on the back, glabrous inside. *Petals* yellow, 6–8 mm long, obovate to orbicular, with a basal nectariferous claw circumvillous within, ledged above and glabrous on the back. *Androgynophore* 1.5 mm tall, glabrous except at the villous apex, not elongated above the node. *Ovary* densely pilose, 2-lobed, up to 10 mm long; style glabrous, with about 4 broad stigmatic lobes. *Fruit* yellowish, normally very deeply 2-lobed, each lobe about 7.5 mm in diam., sparsely stellate-pilose.

A species of open bush or woodland near the Angolan and Botswana borders of South West Africa/Nami-

bia. Often grows near rivers and on termite mounds. Found also in the neighbouring areas of Zambia, Angola, Botswana and Zimbabwe. Map 7.

Vouchers: *De Winter & Leistner* 5292; *De Winter & Marais* 4588; 4703.

Belongs to section *Axillares*.

17. *Grewia sulcata* Mast. in F.T.A. 1: 252 (1868); Burret in Bot. Jb. 45: 188 (1910); Burt Davy, Fl. Transv. 1: 255 (1926); Codd, Mem. bot. Surv. S. Afr. 26: 118 (1951); Wild in F.Z. 2.1: 56 (1963); Wild & Gonçalves in F.M. 28: 27 (1969). Syntypes: Mozambique, Shupanga, *Kirk* 358 (K!); Luabo R., *Kirk* s.n. (K!); Zimbabwe or Botswana, S. of Zambesi River, *Baines* s.n. (K!).

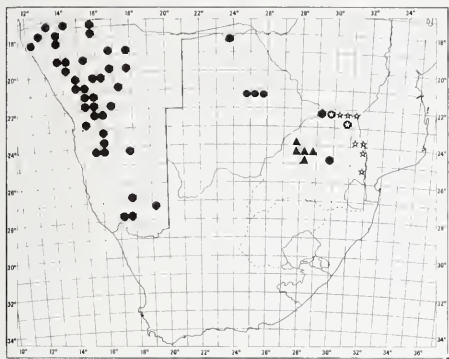
Erect or straggling shrub 2–3 m tall; young branches and inflorescences ferruginously tomentose. *Leaf-blade* 20–70 × 15–45 mm, obovate or occasionally oblong, rounded or bluntly acuminate at the apex, rounded or slightly cordate at the slightly asymmetrical base, crenate-dentate, slightly scabrous above, hispid or tomentose below, secondary venation rather prominent below; petiole up to 5 mm, hispid or tomentellous; stipules about 2 mm long, linear, caducous. *Inflorescences* mostly at the ends of the branchlets, usually more than 3-flowered; peduncles 10–15 mm long, ferruginously hairy; pedicels similar, about 10 mm long; bracts up to 2.5 mm long, hairy on the outside, entire, lanceolate-linear. *Buds* oblong, slightly inflated at the base, slightly constricted above the base. *Sepals* 12.5–17.5 mm long, linear-oblong, rufous-tomentose outside, glabrous and white within. *Petals* white, 7.5–13 mm long, narrowly triangular, tapering to the apex, with a basal nectariferous claw circumvillous within, ledged above. *Androgynophore* up to 1.5 mm tall, glabrous below, sulcate, elongated above the node into a tomentellous upper portion 2–3.5 mm tall. *Ovary* globose, 4-lobed; stigma with 4–5 broad lobes. *Fruit* 15–20 mm in diam., 4-lobed, sparingly hispid, slightly fleshy.

A species of low altitude river valleys from the Transvaal to Tanzania; common on sandy river banks. Fruit edible. Map 8.

Vouchers: *Codd* 5405; 8284; *Rogers* 4812.

Belongs to section *Grewia* (= section *Oppositiflorae* Burret).

18. *Grewia rogersii* Burt Davy & Greenway in Burt Davy, Fl. Transv. 1: 41 (1926). Type: Transvaal, Waterberg Distr., Sandrivierspoort, *Rogers* 24934 (K, holo.).



MAP 8.— ☆ *Grewia sulcata*
 ▲ *Grewia rogersii*
 ● *Grewia tenax*
 ⊙ *Grewia tenax* and *G. sulcata*

Small spreading bush or shrub up to 5 m tall; young branches brown tomentellous, later glabrescent with purplish brown bark. *Leaf-blade* up to 70×37 mm, oblong-elliptic or oblong-ovate, apex acute or obtuse, base rounded and often somewhat asymmetric, margin serrate, rather shining, dark green (or bronze in dried specimens) minutely and sparsely stellate-puberulent above, whitish or very pale brownish tomentose below with prominent nerves; petiole up to 5 mm long, whitish or brownish tomentose; stipules up to 6 mm long, very caducous, subulate, tomentellous. *Inflorescences* apparently axillary, usually 3-flowered; peduncles up to 15 mm long, tomentose; pedicels similar, about 10 mm long; bracts very caducous, not seen. *Sepals* about 9×1.5 mm, linear-oblong, apex acute or subacute, tomentose outside, 3-nerved, glabrous within. *Petals* yellow, about $\frac{2}{3}$ the length of the sepals, narrowly obovate-oblong, basal nectariferous claw not wider than the base of the blade, about 1 mm long, circumvillous within but not very densely so. *Androgynophore* with a basal glabrous portion 1 mm long, tomentose at the apex but scarcely produced beyond the basal glabrous portion. *Ovary* 4-lobed, densely villous; style 3–5 mm long, glabrous, stigma-lobes broad. *Fruit* (slightly immature) 9 mm in diam., very deeply 4-lobed, tomentellous and with longer brownish hairs.

Known only from the Waterberg, Transvaal, and apparently rather rare; on rocky hillsides. Map 8.

Vouchers: Codd 987; Galpin 11681; 13440.

This species was stated by its authors to be related to *G. madandensis* J.R. Drummond (= *G. bicolor* Juss.) which is in section *Axillares* Burret. Although the inflorescences are certainly not opposite the leaves, they are in fact somewhat extra-axillary and, what is much more important in this connection, the ovary and fruit are very deeply 4-lobed; it is better placed, therefore, in section *Grewia* (= section *Oppositiflora* Burret) for the time being although it is obviously somewhat intermediate between the two sections. The fact that its flowers are yellow rather than pink, mauve or white, also points to this conclusion.

19. *Grewia tenax* (Forssk.) Fiori in Agric. Colon. 5, Suppl. 23 (1912); Wild in F.Z. 2, 1: 59 (1963). Type: Arabia, *Forsskal* (BM, holo.!). C).

Chadara tenax Forssk., Fl. Aegypt. Arab. cxiv, 105 (1775). *Grewia populifolia* Vahl, Symb. Bot. 1: 33 (1790); Mast. in F.T.A. 1: 246 (1868); Burret in Bot. Jb. 45: 192 (1910), nom. illegit. Type: as above.

G. betulifolia Juss. in Ann. Mus. natn. Hist. nat. 4: 92, t. 50, fig. 1 (1804). Type: Senegal, *Adanson* (P, holo.!).

G. betulifolia Schinz in Bull. Herb. Boissier, sér. 2, 8: 700 (1908). Type: South West Africa/Namibia, Ovambo, Omolanga, *Schinz* 391 (Z, holo.!).

G. rupestris Dinter & Schinz in Bull. Herb. Boissier sér. 2, 8: 702 (1908). Type: South West Africa/Namibia: Hereroland, Omaruru, *Dinter* 1428 (Z, holo.!).

Small shrub up to 2 m tall, branches glabrescent. *Leaf-blade* up to 30×20 mm, orbicular to obovate, broadly rounded at the apex, rounded or abruptly cuneate at the base, rather coarsely dentate, slightly scabrous-pubescent with tufted hairs, especially below, or glabrescent; greyish green, coriaceous; petiole up to 10 mm long but usually much less, pubescent with tufted hairs; stipules up to 4 mm long, filiform, pubescent. *Flowers* always borne singly, leaf-opposed; peduncles about 10 mm long, almost glabrous, slender; pedicels similar, up to 10 mm long, the whole giving the appearance of an articulated pedicel; bracts about 1.5 mm long, glabrescent. *Sepals* greenish, 10–18 mm long, shortly pubescent outside, white and glabrous inside, linear-oblong. *Petals* white with a linear and often bidentate lamina almost as long as the sepals and narrower than the basal nectariferous claw which is circumvillous within, ledged above and up to 1.5 mm tall. *Androgynophore* with a basal glabrous portion up to 1.5 mm tall and a closely pubescent upper portion up to 1.5 mm tall. *Ovary* 4-lobed, glabrous or glabrescent; style about 10 mm long, glabrous; stigma-lobes broad. *Fruit*

about 10 mm in diam., 4-lobed, shining, glabrous.

A species of dry woodland or semi-desert scrub in Transvaal and South West Africa/Namibia. Widespread in Africa northwards through Zimbabwe and Angola to Senegal and through tropical East Africa to Ethiopia and the Arabian Peninsula. Map 8.

Vouchers: Codd & Dyer 3847; De Winter 3128; Mermüller & Giess 1590.

Belongs to section *Grewia*.

20. *Grewia occidentalis* L., Sp. Pl. 2: 964 (1753); Curtis's bot. Mag. 12: t. 422 (1798); DC., Prodr. 1: 511 (1824); Harv. in F.C. 1: 225 (1860); Mast. in F.T.A. 1: 246 (1868); Wood & Evans, Natal Plants 3, 1: 6, t. 210 (1900); Sim, For. Fl. Cape Col. 147, t. 18, fig. 1 (1907); Burret in Bot. Jb. 45: 191 (1910); Stoneman, Plants and their ways in S. Afr. edn 2: 329 (1915); Marloth, Fl. S. Afr. 2: 170, t. 60, fig. A (1925); Burt Davy, Fl. Transv. 1: 255 (1926); Adamson in Adamson & Salter, Fl. Cape Penins. 577 (1950); Letty, Wild Flow. Transv. 209, t. 104 (1962); Wild in F.Z. 2, 1: 58 (1963); Compton, Fl. Swaziland 56 (1966); Wild & Gonçalves in F.M. 28: 30 (1969); Jacot Guillarmod, Fl. Lesotho 209 (1971); Ross, Fl. Natal 241 (1972). Type: Cape (Herb. Linn., holo.!).

G. pentheri Gandoger in Bull. Soc. bot. Fr. 60: 457 (1913). Type: Cape, Naloga, *Penther* & *Krook* 2248 (LY, holo.!).

G. rudatisii Burret in Notizbl. bot. Gart. Mus. Berl. 9: 869 (1926). Type: Natal, Durban, Winkle Spruit, *Rudatis* 1499 (B, holo.†; BM!; K!).

G. columaris sensu Szyszyl., Polypet. Thalam. Rehm. 56 (1887).

G. angolensis sensu Szyszyl., l.c. 58 (1887).

Shrub or small tree up to 3 m tall with rather slender glabrescent branchlets. *Leaf-blade* 20–40 (–50) × 10–20 (–30) mm, lanceolate, rhomboid-lanceolate or obovate-lanceolate, acute or rounded at the apex, subcuneate, rounded, or slightly cordate at the base, glabrous or slightly stellate-pubescent on both sides, crenate or crenate-dentate, rather thin-textured; petiole up to 13 mm long, glabrescent; stipules up to 4 mm long, linear, pubescent, caducous. *Inflorescences* leaf-opposed, 1(–3)-flowered; peduncles up to 15 mm long, slender, glabrescent; pedicels similar, up to 12 mm long. *Sepals* up to 17.5 mm long, linear-oblong, pubescent and greenish outside, purplish or pink inside. *Petals* purple, mauve, pinkish or very rarely white, up to 14 mm long, oblong-lanceolate, with a

basal nectariferous claw circumvillous within, ledged above and 1 mm tall. *Androgynophore* glabrous below for 1 mm, prolonged above into a densely pubescent portion up to 3 mm long. *Ovary* densely hairy, 4-lobed; style up to 10 mm long, glabrous; stigma-lobes broad. *Fruit* up to 25 mm in diam., 4-lobed, shining, glabrescent, reddish purple, somewhat fleshy.

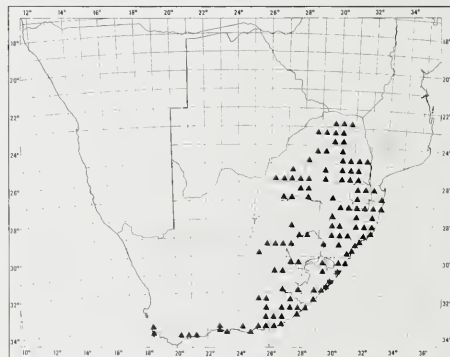
Shrub or small tree found at forest edges and in forest clearings, also in coastal bush or occasionally a climber in closed forest. Widespread in the wetter parts of the Cape, Natal, Orange Free State, Transvaal, Lesotho and Swaziland, very rare in South West Africa/Namibia and also in Zimbabwe and Mozambique. Map 9.

Vouchers: Compton 30134; Flanagan 2376; Galpin 9131; 12024; Verdoorn 684; 784.

A very variable species in leaf-shape and leaf-size. This is the type species of the genus and belongs therefore to section *Grewia*.

A rare form with unusually small, rather densely stellate-pubescent leaves is represented in South West Africa/Namibia by *Breyer* in TRV 20669 from Klein Namutoni; it is the same as *G. mossamedensis* Exell & Mcdonough from southern Angola but this is not in my opinion a distinct species. Forms resembling it very closely are found in the Transvaal and Natal, i.e. *Verdoorn* 117 from Pretoria and *Letty* 228 from Port Shepstone.

The South West Africa/Namibia specimen is the only record in that area, whereas *Verdoorn* 117 etc. are among many other representatives of the species.



MAP 9.— ▲ *Grewia occidentalis*
★ *Grewia pondoensis* and *G. occidentalis*

21. *Grewia pondoensis* Burret in Bot. Jb. 45: 190 (1910). Type: Transkei, Pondoland, *Bachmann* 860 (B, holo.†).

Small tree or scrambler up to 5 m tall; branchlets glabrous. *Leaf-blade* 40–80 × 20–50 mm, coriaceous, glabrous and usually shiny above, apex obtuse to subacute, base obtuse to rounded, margin subentire; petiole

up to 15 mm long; stipules 2–3 mm long, linear, caducous. *Inflorescence* leaf-opposed, 1 (–3)-flowered; peduncles up to 10 mm long, glabrous; pedicels up to 15 mm long, slender, shortly stellate-pubescent. *Sepals* 15 mm long, linear-oblong, pubescent and greenish outside, pinkish inside. *Petals* pink, 13–15 mm long, oblong-oblongate, with a basal nectariferous portion 2.5 mm long, circumvillous, ridged above. *Androgynophore* glabrous below for 1 mm, prolonged above into a densely pubescent portion 1.5 mm long. *Ovary* densely hairy, 4-lobed; style 10 mm long, glabrous; stigma broad. *Fruit* 4-lobed, shining, glabrescent, brown to blackish, somewhat fleshy.

Found as a scrambler in coastal bush, in Pondoland and the extreme south of Natal. Map 9.

Vouchers: *Acocks* 13263; *Strey* 7201; *Van Wyk* 5286; 5323.

Related to *G. occidentalis* (no. 20) but the leaves are larger, thicker-textured and shinier on the upper surface, with entire or subentire margins. The holotype in B has unfortunately been destroyed and no further material of the type gathering has been located but, judging by the description, there is little doubt that it applies to the present concept.

22. *Grewia avellana* Hiern, Cat. Afr. Pl. Welw. 1: 94 (1896); Burret in Bot. Jb. 45: 190 (1910); Wild in F.Z. 2,1: 58 (1963); Roessl. in F.S.W.A. 81: 6 (1969). Type: Angola, Huila, Morro de Lopolo, *Welwitsch* 1379 (BM, holo.!; COI!; K!; LISU!).

G. guazumaeifolia sensu Mast. in F.T.A. 1: 245 (1868); Burret, l.c. 45: 201 (1910).

G. calycina N.E. Br. in Kew Bull. 1909: 97 (1909). Type: Botswana, Botletle Valley, *Lugard* 237 (K, holo.!).

G. hydrophila K. Schum. in Warb., Kunene-Samb. Exped. 297 (1903). Type: Angola, Kuito, *Baum* 535.

G. perennans K. Schum., l.c. 298 (1903). Type: Angola, Kubango, *Baum* 289.

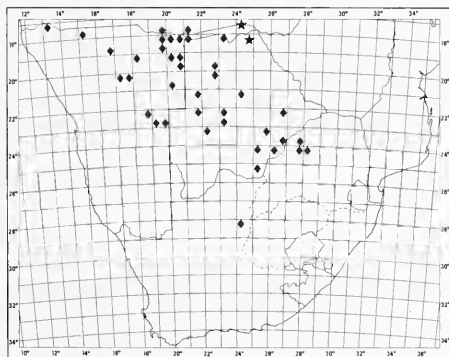
Rounded bush with yellowish brown, densely pubescent branchlets, glabrescent and dark brown with age. *Leaf-blade* 20–45 × 15–30 mm, elliptic to ovate-elliptic, obtuse or acute at the apex, rounded at the base, crenate-dentate, softly pubescent on both sides; petiole up to 2.5 mm long, densely pubescent. *Inflorescences* terminal and leaf-opposed, 2–3 flowered; peduncles densely pubescent, up to 10 mm long; pedicels similar, 2–3 mm long; bracts pubescent, divided into 2–3 filiform segments, up to 10 mm long. *Sepals* up to 17 mm long, linear-lanceolate, acute at the apex, greenish and tomentellous outside, white and glabrous inside. *Petals* white, about

2–3 mm long, with a shortly triangular lamina and a nectariferous claw larger and wider than the lamina, circumvillous within and ledged above. *Androgynophore* about 1.5 mm tall, glabrous at the base, pubescent at the apex at the insertion of the stamens but not elongated. *Ovary* villous, 4-lobed; style about 10 mm long, glabrous; stigma-lobes broad. *Fruit* up to 25 mm in diam., deeply 4-lobed, blackish when ripe, rather fleshy, very sparsely setulose.

A species of the drier types of woodland and often found on Kalahari Sand soils. Spreads from the sandy regions of the western Transvaal to South West Africa/Namibia, Botswana, Zimbabwe, Zambia and Angola. The fruit is unusually large and fleshy for the genus and is edible. Map 10.

Vouchers: *Dinter* 7310; *Meeuse* 10788; *Strey* 2675.

Belongs to section *Grewia*.



MAP 10. — ♦ *Grewia avellana*
* *Grewia pachycalyx*

23. *Grewia pachycalyx* K. Schum. in Bot. Jb. 15: 123 (1892); Burret in Bot. Jb. 45: 196 (1910); Wild in F.Z. 2,1: 61 (1963); Wild & Gonçalves in F.M. 28: 33 (1969). Type: East Africa (Tanzania), *Fischer* (B, holo.†).

G. occidentalis sensu O.B. Mill. in Jl S. Afr. Bot. 18: 53 (1953).

Shrub, sometimes scandent, up to 5 m tall; branchlets rather pale or reddish-pubescent, soon becoming glabrous. *Leaf-blade* 60–150 × 25–60 mm, oblong-lanceolate, subrhombic or narrowly obovate, apex acute or shortly acuminate, base rounded or subuneate, margin finely crenate-dentate, thin textured, finely pubescent above when young but soon glabrous, finely but more densely pubescent below and also eventually glabrous; pe-

tiole up to 8 mm long, pubescent; stipules up to 14 mm long, lanceolate-acuminate, with a dorsal keel, pubescent. *Inflorescences* opposite the leaves, 1–4(–9)-flowered; peduncles up to 2 mm long, pubescent; pedicels up to 15 mm long, pubescent; bracts about 2 mm long, shortly triangular. *Sepals* 15–22 × 3.5–5 mm, linear-oblong, hooded but not thickened at the apex, greenish-pubescent outside, white and glabrous inside. *Petals* white, up to 15 × 10 mm, ovate-lanceolate; blade much wider than the nectariferous claw, circumvillous and ledged above. *Androgynophore* with a lower glabrous portion up to 1.5 mm long and an elongated pubescent upper portion up to 4.5 mm long. *Ovary* 4-lobed, pubescent; style up to 10 mm long, finely stellate-pubescent or glabrous except at the base; stigma-lobes broad. *Fruit* orange-red when ripe, about 20 mm in diam., 4-lobed, shining, glabrescent.

A thicket-forming species along rivers. Recorded from the Caprivi Strip, South West Africa/Namibia and also found in Botswana, Zimbabwe, Zambia, Malawi, Mozambique and Tanzania. Map 10.

Vouchers: *Codd* 7099; *Killick & Leistner* 3306.

Belongs to section *Grewia*.

24. *Grewia lasiocarpa* E. Mey. ex Harv. in F.C. 1: 226 (1860); Drège, Zwei Pfl. Doc. 188 (1843), nom. nud.; Burret in Bot. Jb. 45: 196 (1910); Ross, Fl. Natal 240 (1972). Syn-types: Natal, between Umtata and Durban, Drège; Natal, Gueinzus (BM!; K!); Transkei, Bowker.

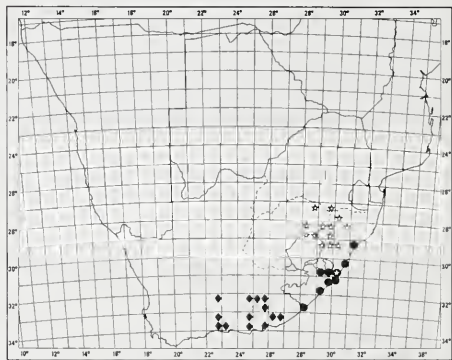
Shrub or sometimes with straggling or climbing branches up to about 5 m tall; young branches coarsely stellate-pubescent but soon becoming purplish brown and glabrous. *Leaf-blade* up to 150 × 150 mm but usually about 80 × 70 mm, broadly ovate or broadly obovate to almost orbicular, apex rounded to obtuse, base rounded or slightly cordate, margin coarsely crenate-dentate, slightly scabrous-pubescent above, more densely and softly pubescent below, strongly 3-nerved from the base; petiole up to 20 mm long, coarsely stellate-pubescent; stipules very caducous, not seen. *Inflorescences* 2–4-flowered, opposite the leaves; peduncles 10–20 mm long, densely ferruginously hirsute; pedicels similar, 5–10 mm long, expanding to 20 mm long in fruit; bracts caducous, up to 12 × 7 mm, lanceolate to ovate, apex acute, densely appressed-tomentose on both sides. *Sepals* 13–17 × 3–5 mm, narrowly oblong, apex

acute, only slightly hooded, ferruginously tomentose outside, glabrous inside. *Petals* pink, about $\frac{3}{4}$ the length of the sepals, blade narrowly oblong-elliptic, basal nectariferous claw 3–4 mm long, slightly wider than the blade, very densely circumvillous, ledged above. *Androgynophore* glabrous below for about 3 mm, tomentose above for about 1.5 mm. *Ovary* 4-lobed, densely villous; style 10 mm long, glabrous; stigma-lobes broad. *Fruit* up to 20 mm in diam., somewhat fleshy, 4-lobed, coarsely and eventually rather sparsely hirsute.

A forest margin species in Natal and the Cape Province. Map 11.

Vouchers; *Acocks* 10945; *Flanagan* 337; *Medley* Wood 12360.

Belongs to section *Grewia*.



MAP 11.—● *Grewia lasiocarpa*
 ☆ *Grewia hispida*
 ⊙ *Grewia hispida* and *G. lasiocarpa*
 ◆ *Grewia robusta*

25. *Grewia hispida* Harv. in F.C. 1: 226 (1860); Burret in Bot. Jb. 45: 196 (1910); Ross, Fl. Natal 240 (1972). Type: Natal, Durban, *Sanderson* 33 (K!; TCD, holo.!).

G. megalocarpa sensu Szyszyl., Polypet. Thalam. Rehm. 57 (1887).

Small shrub with coarsely pubescent branchlets which are eventually glabrescent with a purplish bark. *Leaf-blade* up to 35 × 23 mm, ovate to broadly obovate or somewhat obovate, apex rounded or rarely subacute, base rounded, margin coarsely serrate, rather harshly stellate-pubescent on both sides, slightly paler below, venation prominent below; petiole 1–2.5 mm long, coarsely pubescent; stipules up to about 3 mm long,

subulate, pubescent. *Inflorescences* opposite the leaves, 1–3-flowered; peduncles up to about 5 mm long, tomentose; pedicels similar, up to about 5 mm long; bracts up to 7 mm long, linear to linear-lanceolate, densely appressed-pubescent outside, more sparsely so within. *Sepals* up to 15 × 5 mm, narrowly oblong-elliptic, apex acute and only very slightly hooded, tomentose outside, glabrous within. *Petals* pink or lilac, almost as long as the sepals, blade narrowly elliptic, basal nectariferous claw 2 mm long, somewhat wider than the base of the lamina, circumvillous and ledged above. *Androgynophore* glabrous for about 1,5 mm below, tomentose for 0,5–1 mm above. *Ovary* 4-lobed, densely villous or hispid; style about 7 mm long, glabrous; stigma-lobes broad. *Fruit* about 17 mm in diam., 4-lobed, rather fleshy, sparsely hispid.

A species of thornveld and mixed scrubland in Natal, the southern Transvaal, and eastern Orange Free State. Map 11.

Vouchers: *Acocks* 9894; *Codd* 2382; *Medley Wood* 8088.

Belongs to section *Grewia*.

26. ***Grewia robusta* Burch.**, Trav. 2: 133 (1824); Burret in Bot. Jb. 45: 195 (1910). Type: Cape, Sneeuberg Mts, *Burchell* 2845 (K, holo.!, PRE!).

G. krebsiana Kuntze, Rev. Gen. 3,2: 26 (1898). Type: Cape, Beaufort West, *Krebs* 42 (B, holo.†).

G. flava sensu Harv. in F.C. 1: 225 (1860).

Small bush up to about 3 m tall, young branches densely stellate-puberulent or tomentellous, later glabrescent with smooth

greyish or greyish purple bark; branches rather stiff. *Leaves* often clustered on abbreviated side-shoots; *leaf-blade* up to 20 × 16 mm, broadly elliptic, obovate, broadly ovate or rotund, apex obtuse, base rounded or slightly cordate, margin finely crenate or almost entire, densely stellate-puberulent above at first but soon glabrescent, greyish tomentellous below; petiole 1–2 mm long, tomentellous; stipules about 2 mm long, caducous, linear, tomentellous. *Inflorescences* reduced to a single flower opposite the leaves; peduncles 2–3 mm long, tomentellous; pedicels similar; bracts linear, similar to the sepals, very caducous. *Sepals* up to 15 × 3 mm, linear-lanceolate, apex subacute, 3-nerved and tomentellous outside, glabrous within. *Petals* pink or mauve, slightly shorter than the sepals, blade narrowly elliptic, basal nectariferous claw scarcely wider than the base of the blade, 1,5 mm long, circumvillous within but not very densely so, pubescent at the back, ledged above. *Androgynophore* with a basal glabrous portion about 1 mm long, tomentose at the apex but scarcely produced beyond the basal glabrous portion except in fruit when this portion may attain a length of about 1 mm. *Ovary* shallowly 4-lobed, densely hirsute; style about 7 mm long, slender, glabrous; stigma-lobes broad. *Fruit* purplish, about 17 mm in diam., deeply 4-lobed often only 2 present, fleshy, sparsely hispid.

Confined to the Cape Province. A species of dense scrub. Readily browsed by cattle. Map 11.

Vouchers: *Acocks* 11863; *Killick* 818; *Marloth* 11290.

Belongs to section *Grewia*.

4975

2. TRIUMFETTA

Triumfetta L., Sp. Pl. 444 (1753); Gen. Pl. edn 5: 203 (1754); DC., Prodr. 1: 506 (1824); Harv. in F.C. 1: 227 (1860); Mast. in F.T.A. 1: 254 (1868); Sprague & Hutch. in J. Linn. Soc., Bot. 39: 231 (1909); Burt Davy, Fl. Transv. 1: 256 (1926); Exell & Mendonça, C.F.A. 1: 225 (1951); Hutch. & Dalz., F.W.T.A. edn 2,1,2: 309 (1958); Wild in F.Z. 2,1: 63 (1963); Wilczek in F.C.B. 10: 4 (1963); Roessl. in F.S.W.A. 81: 9 (1969); Wild & Gonçalves in F.M. 28: 37 (1969); R. A. Dyer, Gen. 1: 354 (1975). Type species: *T. lappula* L. (tropical Ameria).

Annual or perennial herbs, suffrutices or shrubs, sometimes having annual stems from a woody rootstock. *Leaves* alternate, petiolate, simple, lobed or digitately divided, serrate or crenate, often several-nerved from the base; stipules lateral. *Flowers* actinomorphic, yellow or orange, borne in cymes in terminal inflorescences or at the nodes. *Sepals* 5, usually linear and with a short horn just behind the apex, usually stellately hairy without. *Petals* 5, linear to obovate, narrowed to the base, and often hairy at the base or just above it. *Stamens* 4–40, raised on a short androgynophore or torus which is glabrous and has a glandular patch just above each petal base; apex of androgynophore produced into a ciliate or pubescent or villous disc or annulus between which and the ovary the stamens are inserted. *Ovary* often tubercled or echinulate, each tubercle surmounted by one or more minute bristles, 2–5-locular with 2 pendulous collateral ovules in each loculus or falsely 10-locular by the intrusion of longitudinal false septa; style terete, about as long as stamens; stigma entire or very shortly 2–5-lobed. *Fruit* a capsule, usually globose, sometimes ovoid, echinate or setose, indehiscent or dividing into 2–5 valves with 1–2 seeds per loculus. *Seeds* obovoid or subreniform; testa rather leathery and brown; embryo straight; cotyledons flat, suborbicular; endosperm fleshy, scanty.

A large genus widely distributed in the tropics and subtropics but particularly common in Africa, with 10 species in Southern Africa. Many species are weeds of cultivation and waste places and early colonisers of fallows or abandoned cultivation; others are frequent in forest clearings and forest margins; many of them are used for the production of native fibres.

- 1 Fruits indehiscent with rather weak, slender plumose bristles; erect shrubs or perennials with a woody rootstock; cymes solitary at the nodes:
 - 2 Small shrubs; sepals stellately pilose outside; mature fruit 30–40 mm in diam. 1. *T. sonderi*
 - 2 Perennial with annual stems from a woody rhizome; sepals golden tomentellous or tomentose outside; mature fruit up to about 22 mm in diam.:
 - 3 Indumentum on young leaves stellate-pubescent and tomentellous on nerve interspaces, at least beneath, and retaining some vestiges of tomentum with age 2(a). *T. welwitschii* var. *welwitschii*
 - 3 Indumentum on young leaves of scattered simple hairs sometimes mixed with stellate hairs 2(b). *T. welwitschii* var. *hirsuta*
- 1 Fruits dehiscent or indehiscent with rigid bristles or prickles terminated by a single straight or curved spinule or by a crown of 2–5 minute setae; annuals or perennials; cymes several at the nodes:
 - 4 Prickles or bristles on fruit terminated by a single straight or curved spinule:
 - 5 Stems prostrate or trailing; leaf-blades broadly elliptic to very broadly ovate, apex obtuse or acute, base rounded or subcordate 4. *T. obtusicornis*
 - 5 Stems erect; leaf-blades usually more or less ovate-acuminate, sometimes lobed, apex acuminate:
 - 6 Prickles on fruit straight. 10. *T. tomentosa*
 - 6 Prickles on fruit hooked or falcate:
 - 7 Fruit about 5–8 mm in diam. including the prickles:
 - 8 Prickles glabrous, body of fruit stellate-tomentose; stamens 15 or more:
 - 9 Leaves broadly ovate to subrotund, base cordate, up to 35 mm long, drying grey-green; perennial shrub 4. *T. benguelensis*
 - 9 Leaves broadly ovate to ovate-lanceolate, often 3-lobed, obtuse to rounded at the base, usually more than 35 mm long, drying brownish; annual or perennial 5. *T. rhomboidea*
 - 8 Prickles ciliate on one side; stamens 5–13 6. *T. pentandra*

7 Fruit 10 mm in diam. or more:

10 Prickles on fruit glabrous or very nearly so:

11 Leaves membranous with simple hairs; sepals 2,5–5 mm long 7(a). *T. annua* forma *annua*
11 Leaves chartaceous to coriaceous, coarsely stellate-pubescent or stellate-tomentose
on both sides:

12 Cauline leaves at least 70 mm long 8(b). *T. pilosa* var. *effusa*

12 Cauline leaves 25–50 mm long 9. *T. delicatula*

10 Prickles on fruit conspicuously pilose:

13 Leaves membranous with simple hairs 7(b). *T. annua* forma *piligera*

13 Leaves not membranous, densely stellately hairy or tomentose:

14 Prickles on fruit with falcate spinules at the tip 10. *T. tomentosa*

14 Prickles on fruit strongly uncinat 8(a). *T. pilosa* var. *tomentosa*

4 Prickles on fruit terminated by a crown of 2–5 minute setae 11. *T. angolensis*

1. ***Triumfetta sonderi*** Ficalho & Hiern in Trans. Linn. Soc. Lond., ser. 2, Bot. 2: 17 (1881); Sprague & Hutch. in J. Linn. Soc., Bot. 39: 250, t. 17 fig. 3 (1909); Burt Davy, Fl. Transv. 1: 256, fig. 39 N-P (1926); Exell & Mendonça, C.F.A. 1: 231 (1951); Letty, Wild Flow. Transv. 208, t. 104 (1962). Type: Transvaal, Zeyher 147 (BM, holo.!).

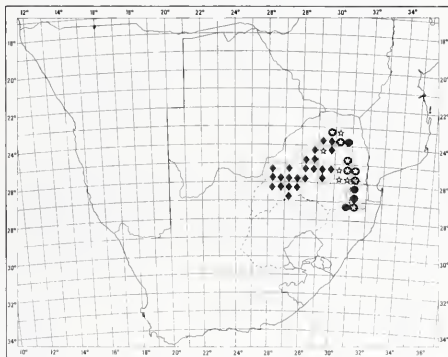
T. trichocarpa Sond. in Linnaea 23: 19 (1850); Harv., Thes. Cap. 1: 33, t. 52 (1859); F.C. 1: 228 (1860); Szyszyl., Polypet. Thalam. Rchm. 59 (1887); non Hochst. ex A. Rich. (1847). *T. sonderiana* H. Bol. in J. Linn. Soc., Bot. 24: 173 (1887). Type: as above.

Small erect undershrub about 0,5 m tall with a woody rootstock, much branched; branches stellate-pubescent with both long and short hairs. *Leaf-blade* up to 40 × 20 mm, elliptic, oblong-lanceolate or oblong-elliptic, apex acute or subacute, base broadly cuneate, margin finely and irregularly dentate-serrate, roughly stellately pilose on both sides, venation reticulate, especially below; petiole up to 2 mm long, stellately pilose; stipules about 3 mm long, subulate, pilose. *Inflorescence* of axillary 2–4-flowered subumbellate cymes in the upper axils; peduncle up to 6 mm long, slender, pilose; pedicels similar, up to 13 mm long in fruit but shorter in flower; bracts up to 3 mm long, subulate, pilose. *Sepals* 7–9 mm long, linear, apex hooded and with a subapical horn about 1,5 mm long, stellately pilose outside. *Petals* yellow, $\frac{2}{3}$ the length of the sepals, linear-spathulate or narrowly oblong-spathulate, rounded or tridentate at the apex, pilose at the base. *Androgynophore* 0,5 mm long, glabrous with roughly circular glands opposite the petals at its base; annulus undulate and ciliate at the margins. *Stamens* 15–20, about the same length as the petals. *Ovary* globose, densely bristly, 3-locular; style about 5 mm long, very

slender. *Fruit* indehiscent, up to 40 mm in diam. including the bristles; bristles about 15 mm long, very slender and very numerous, plumose with simple or occasionally binate setulose hairs, terminated by a single slender seta. Fig. 2: 1.

Known so far only from the Transvaal, a species of open grassland, woodland or roadsides. Map 12.

Vouchers: Codd 2545; Galpin 11565; Schlechter 4145.



MAP 12.— ♦ ***Triumfetta sonderi***
☆ *Triumfetta welwitschii* var. *welwitschii*
● *Triumfetta welwitschii* var. *hirsuta*
⊙ *Triumfetta welwitschii* var. *welwitschii*
and var. *hirsuta*

2. ***Triumfetta welwitschii*** Mast. in F.T.A. 1: 255 (1868); Exell & Mendonça, C.F.A. 1: 225 (1951); Wild in F.Z. 2,1: 68 (1963); Wild & Gonçalves in F.M. 28: 40 (1969). Type: Angola, Pungo Andongo, Welwitsch 1414 (LISU, holo.; BM!; COI!; K!).

Perennial herb sending up annual stems from a woody rootstock; flowers developing before the leaves on the first shoots and some

purely vegetative leafy shoots appearing later in the growing season. *Stems* 0.2–0.45 m tall, yellowish or greyish tomentellous, glabrescent below. *Leaf-blade* 30–110 × 4–20 mm, linear-lanceolate, oblanceolate or obovate-oblong, tomentellous or softly pubescent, more densely so below, or almost entirely glabrous except when very young, apex obtuse, rounded, acute or apiculate, narrowly cuneate at the base, margin entire, serrulate or conspicuously serrate; petiole tomentellous, about 5 mm long; stipules about 7 mm long, subulate-triangular, pubescent. *Inflorescence* terminal, up to 150 mm long, of small dense cymes with the internodes elongating in fruit, closely covered with a yellowish or golden velvety tomentum; bracts linear, about 2.5 mm long, silky pubescent outside. *Sepals* 6–10 mm long, linear-oblong, spatulate, golden tomentellous outside with a subapical horn 0.25–0.5 mm long. *Petals* yellow, 5–9.5 × 3–5 mm spatulate-oblong to obovate, rounded or slightly emarginate at the apex, villous just above the base. *Androgynophore* about 0.5 mm long with an annulus above with a ciliate rim. *Stamens* variable in number, 20–50. *Ovary* globose, villous. *Fruit* about 20–25 mm in diam. including the bristles, globose; bristles very numerous, about 7 mm long, very slender, plumose, with 1–3 fine setae at the apex.

A very variable species of open woodland and grassland widespread from the Transvaal to Zaïre in the west and to Tanzania in the east. Most commonly seen in flower just before the rains and particularly obvious after a burn. The leaves expand and more leafy shoots develop in the course of the rainy season.

For key to the varieties see key to species.

(a) var. *welwitschii*.

Wild in F.Z. 2,1: 68 (1963); Wild & Gonçalves in F.M. 28: 42 (1969).

T. welwitschii Mast. in F.T.A. 1: 255 (1868); Sprague & Hutch. in J. Linn. Soc., Bot. 39: 253 (1909).

T. rehmannii Szyszyl., Polypet. Thalam. Rehm. 59 (1887). *T. welwitschii* var. *rehmannii* (Szyszyl.) Sprague & Hutch. in J. Linn. Soc., Bot. 39: 253 (1909); Burt Davy, Fl. Transv. 1: 256 (1926). Type: Transvaal, Houtbosch, Rehmann 6316 (K!; Z!).

T. mastersii Bak. f. in Trans. Linn. Soc. Lond. ser. 2, Bot. 4: 6 (1894); Sprague & Hutch., l.c. 252 (1909). Type: Malawi, Mt Malanje, Whyte 163 (K, holo.).

Leaves stellate-pubescent and closely tomentellous, especially beneath and with their undersides retaining some vestiges of tomentum even when older.

Recorded from the Transvaal; otherwise the distribution of this variety is the same as that for the species as a whole except that it is not known as yet from Zaïre. Map 12.

Vouchers: Galpin 478; 11403; Gersmer 5673; Meeuse 10270; 10276.

(b) var. *hirsuta* (Sprague & Hutch.) Wild in Bolm Soc. broteriana sér. 2, 31: 87 (1957); F.Z. 2,1: 69 (1963); Ross, Fl. Natal 241 (1972). Syntypes: Transvaal, Junod 605 (Z!); 607 (Z!); Thormcroft sub Wood 4353 (K!); Galpin 478 (K!; PRE!); Bolus 7688 (K!); Athertonstone s.n. (K!)

T. hirsuta Sprague & Hutch. in J. Linn. Soc., Bot. 39: 251 (1909); Weimarck in Bot. Notiser 1936: 47 (1936).

T. mastersii var. *descampsii* sensu Burt Davy, Fl. Transv. 1: 256 (1926) quoad specim. Transv. & Swaziland.

Distinguished from var. *welwitschii* by its leaves, stems etc. being glabrous except for scattered simple setulose hairs or occasionally with a few short scattered stellate hairs in addition.

Known from the Transvaal and Swaziland and, in addition, from Zimbabwe and Zambia. Map 12.

Vouchers: Bolus 7688; Codd 2103; 5654; Galpin 9602; 14551.

3. *Triumfetta obtusicornis* Sprague & Hutch. in J. Linn. Soc., Bot. 39: 261 (1909); Burt Davy, Fl. Transv. 1: 257 (1926). Type: Transvaal, near Middelburg, Wilms 115 (K, holo.; BM!).

Prostrate or trailing perennial with branches about 1 m long; rootstock woody; branches rather sparsely stellate-pilose. *Leaf-blade* up to 40 × 38 mm, broadly elliptic to very broadly ovate, apex obtuse or acute, base rounded or subcordate, margin crenate-serrate, sparsely stellate-pubescent on the nerves and veins, otherwise glabrous, 5–7 nerved from the base, venation reticulate on both sides; petiole up to 6 mm long, pilose; stipules 4–6 mm long, subulate, pilose. *Flowers* normally in 3-flowered cymes in the upper axils, the cymes often paired in each axil; peduncles up to 7 mm long, stellate-pubescent; pedicels similar, up to 8 mm long; bracts about 3 mm long, subulate, pilose. *Sepals* about 8 mm long, linear, hooded at the apex, with a rather stout subapical horn 1 mm long, rather densely stellate-pilose outside. *Petals* yellow, almost as long as the sepals, oblanceolate, pilose at the base. *Androgynophore* 0.3 mm long, glabrous, with suborbicular glands opposite the petal bases; annulus un-

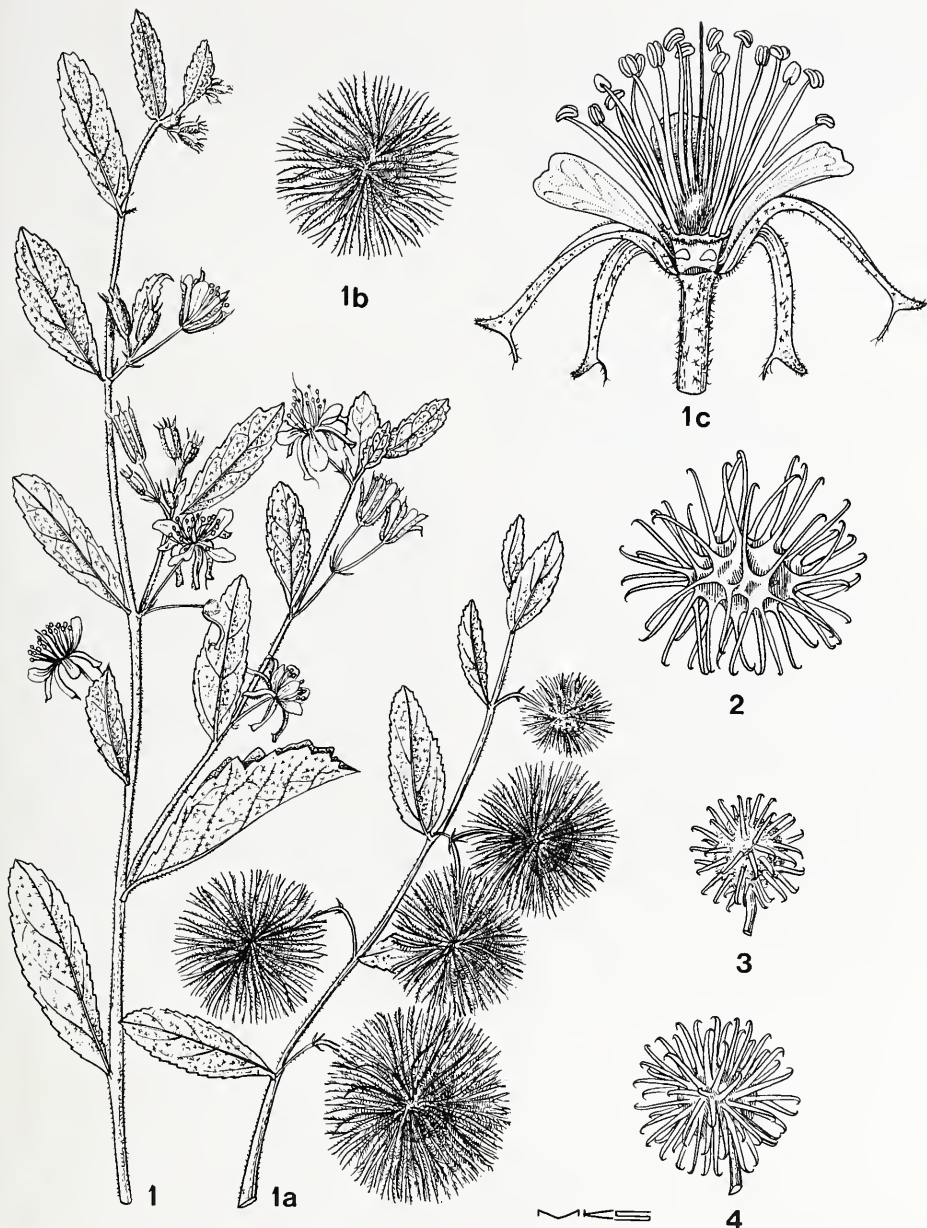


FIG. 2.-1, *Triumfetta sonderi*, flowering shoot, $\times 1$ (Theron 1001); 1a, fruiting twig, $\times 1$; 1b, fruit, $\times 1$ (both from Smith 123); 1c, flower, front sepal and petals removed, $\times 4$ (Theron 1001). 2, *Triumfetta annua* forma *annua*, fruit, $\times 3$ (Kettles 2887). 3, *Triumfetta rhomboidea*, fruit, $\times 3$ (Junod 33). 4, *Triumfetta pilosa* var. *effusa*, $\times 1$ (after Henderson, M. & Anderson, J. G., Common weeds in South Africa).

dulate, ciliate at the margin. *Stamens* 8–10; filaments 5–6 mm long. *Ovary* globose, 2-locular, densely setulose, setulae with a single apical spinule; style about 8 mm long. *Fruit* 8 × 6 mm including the rather stiff bristles, ellipsoid; bristles up to 5 mm long, stellately pubescent with a single terminal caducous seta.

A species of the Transvaal Highveld. Common on sandveld. Not known from outside the Transvaal. Map 13.

Vouchers: *Acocks* 16614; *Galpin* 12963; *Schlechter* 3745.

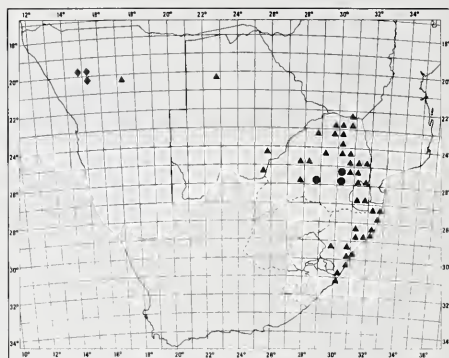
4. ***Triumfetta benguelensis* Wawra & Peyr.** in Sber. Akad. Wiss. Wien 38: 559 (1860); Sprague & Hutch. in J. Linn. Soc., Bot. 39: 264 (1909); Exell & Mendonça, C.F.A. 1: 233 (1951). Type: Angola, Benguela, Wawra 284.

Shrub 0.6–1.5 m tall and with equal spread; branchlets densely stellate-tomentose. *Leaf-blade* 20–38 × 20–35 mm broadly ovate to subrotund, stellate-tomentose on both surfaces, drying grey-green, apex obtuse, base cordate, 3–5-nerved from the base, irregularly and often doubly serrate; petiole up to 20 mm long; stipules about 4 mm long, lanceolate-subulate, stellate-pubescent. *Inflorescence* slender, terminal, 120–180 mm long, of 2–6-flowered subsessile cymes, spaced 10–20 mm apart; bracts ovate, 4 mm long, stellate-pubescent; bracteoles 3 mm long, linear. *Sepals* 8–10 mm long, linear-spathulate, hooded towards the apex, stellate-tomentose outside. *Petals* yellow, slightly shorter than the sepals, obovate-spathulate. *Androgynophore* 0.25 mm tall; annulus pubescent on the margin. *Stamens* about 25. *Ovary* 2–3-celled, densely echinulate. *Capsule* 8–9 mm long, 6–7 mm in diam. including the prickles, ovoid-globose, its body densely tomentose; prickles uncinatate at the apex, tomentose at the base, glabrous above.

Found on granite koppies in north-western South West Africa/Namibia; also in south-western Angola. Map 13.

Vouchers: *Merxmüller & Giess* 30303; 30401.

5. ***Triumfetta rhomboidea* Jacq., Enum.** Syst. Pl. Ins. Carib. 22 (1760); Harv. in F.C. 1: 227 (1860); Mast. in F.T.A. 1: 257 (1868); Sprague & Hutch. in J. Linn. Soc., Bot. 39: 266 (1909); Burt Davy, Fl. Transv. 1: 257 (1926); Exell & Mendonça, C.F.A. 1: 234 (1951); Wild in F.Z. 2, 1: 73 (1963); Wilczek



MAP 13.—● *Triumfetta obtusicornis*
◆ *Triumfetta benguelensis*
▲ *Triumfetta rhomboidea*

in F.C.B. 10: 49 (1963); Wild & Gonçalves in F.M. 28: 47 (1969); Ross, Fl. Natal 241 (1972). Type: West Indies, specim. in Herb. Jacquini (BM!).

Bartramia indica L., Sp. Pl. 1: 389 (1753), non *Triumfetta indica* Lam. (1791). *T. bartramia* L., Syst. Nat. edn 10, 2: 1044 (1759), nom. illegit. Type: from India.

T. diversifolia E. Mey. in Drège, Zwei Pfl. Doc. 227 (1843), nom. nud.

T. riparia Hochst. in Flora 27: 295 (1844). Type: Natal, Krauss 56 (B, holo.†; BM!).

T. rhomboidea var. *tomentosa* Szyszyl., Polypet. Thalam. Rehm. 59 (1887); Burt Davy, l.c. 257 (1926). Type: Transvaal, Rehmann 6318 (BM!; K!).

Very polymorphic species up to about 2 m tall, usually annual but there seem to be perennial forms; branches almost glabrous to velvety or tomentose. *Leaf-blade* 25–150 × 20–100 mm, ovate to ovate-lanceolate, acute at the apex, often three-lobed, cordate or truncate at the base, 3–7-nerved from the base, irregularly serrate; petiole up to 50 mm long; stipules about 4 mm long, linear-lanceolate, setose-pubescent. *Inflorescence* foliose with the inflorescence leaves smaller and narrower than the cauline leaves; cymes crowded at the nodes; peduncles and pedicels short, 1.5–3 mm long; bracts linear, about 3 mm long, pubescent. *Sepals* 4–5 mm long, linear, hooded towards the apex, stellate-pubescent outside or almost glabrous; subapical horn about 0.5 mm long, setulose-pubescent. *Petals* yellow, slightly shorter than the sepals, linear-oblongate, villous at the base. *Androgynophore* 0.25 mm tall with suborbicular glands opposite the petal bases; annulus vil-

lous on its upper margin. *Stamens* about 15. *Ovary* 2–3-locular, closely setulose or echinulate. *Capsule* 4–5 mm in diam. including the prickles, globose or ovoid-globose, its body densely tomentose; prickles uncinatate at the apex, glabrous. Fig. 2: 3.

Commonly occurs as a weed of cultivation but is also found growing naturally in open grassland and woodland. Common in the north-eastern Cape, Natal, Swaziland, the Transvaal, South West Africa/Namibia and throughout the tropical and subtropical regions of the world. Map 13.

Vouchers: *Acocks* 13386; *Codd* 6834; 8712; *Galpin* 761.

Extremely variable in the density of its indumentum and leaf-shape. All variations from almost glabrous to densely tomentose exist and so var. *tomentosa* Szyszyl. can scarcely be accurately differentiated.

6. ***Triumfetta pentandra* A. Rich** in A. Rich., Guill. & Perr., Fl. Seneg. Tent. 1: 93, t. 19 (1831); Mast. in F.T.A. 1: 255 (1868); Sprague & Hutch. in J. Linn. Soc., Bot. 39: 267, t. 17, fig. 9 (1909); Wild in F.Z. 2,1: 74 (1963); Wilczek in F.C.B. 10: 52 (1963); Roessl. in F.S.W.A. 81: 10 (1969); Wild & Gonçalves in F.M. 28: 48 (1969); Ross, Fl. Natal 241 (1972). Syntypes: Senegal, *Perrotet* (P!); *Leprieur* (P!).

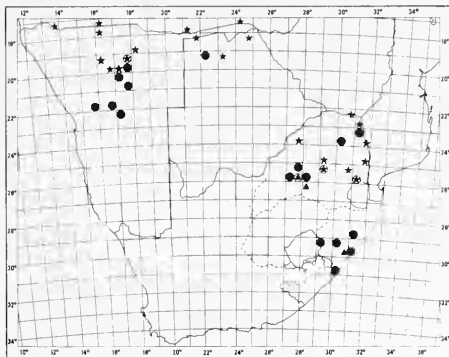
An annual herb very like *T. rhomboidea* (no. 5) in general appearance but much more sparingly hairy, never being more than stellate-pubescent, the leaves as a rule are thinner-textured, the stamens are usually fewer and often about five; the most important differences, however, are in the fruit which is ovoid, not globose, glabrous, not tomentose, except for the prickles which are ascending and densely ciliate on their upper sides below their uncinatate apices.

A weed of cultivation but also occurs naturally in open grassland and woodland. In South West Africa/Namibia, the Transvaal, also throughout tropical Africa and in India and the Republic of China. Map 14.

Vouchers: *Codd* 5315; *De Winter & Marais* 4608; *Dinter* 5678; 7508.

7. ***Triumfetta annua* L., Mant.** 73 (1767); Mast. in F.T.A. 1: 256 (1868); Wild in F.Z. 2,1: 75 (1963); Wild & Gonçalves in F.M. 28: 49 (1969). Iconotype: a figure in Mill., Fig. Pl. 2: t. 298 (1760), drawn from a cultivated plant grown from seed collected in India.

Annual, 0.1–0.6 m tall; young stems with a sparse pubescence of simple, ciliate hairs together with a short, crisped pubescence in a single or in two opposite lines down the stem. *Leaf-blade* 30–120 × 20–



MAP 14.— ★ *Triumfetta pentandra*
● *Triumfetta annua* forma *annua*
⊠ *Triumfetta annua* forma *piligera*
⊗ *Triumfetta annua* forma *annua* and
T. pentandra
⊗ *Triumfetta annua* forma *annua* and
forma *piligera*

70 mm, ovate, becoming narrower upwards on the stems, acutely acuminate at the apex, rounded at the base, coarsely serrate or crenate, membranous, sparingly setulose-pubescent above and below; petiole up to 75 mm long, with a line of crisped pubescence on the upper side; stipules about 5 mm long, subulate or lanceolate. *Inflorescence* of small 1–5-flowered cymes clustered together at the nodes; peduncles usually very short, up to 2 mm long, puberulent along one side; pedicels similar, 0.5–2 mm long; bracts about 2 mm long, lanceolate to subulate, setulose-pubescent at least on the margins. *Sepals* 2.5–5 mm long, linear, sparingly setulose-pubescent particularly towards the apex, or almost glabrous, subapical horn up to 0.5 mm long with one or several setulose hairs. *Petals* yellow, slightly shorter than the sepals, oblancoate or linear-oblancoate, minutely ciliate at the base. *Androgynophore* very short, about 0.2 mm long, glands opposite petal bases subquadrate; annulus with its margin reflexed and sparingly ciliate. *Stamens* 4–12. *Ovary* depressed-globose, echinulate, 4-locular. *Capsule* about 15 mm in diam. including the prickles, depressed-globose, glabrous or with some weak hairs on the body of the fruit and the base of the prickles, fruit body deeply reticulate; prickles about 60, 3–5 mm long, broadening at the base, uncinatate and slightly flexuous particularly when young.

Widely distributed in tropical and subtropical Africa, Malagasy Republic, India, China and Malaya.

For key to forms see key to species.

(a) forma *annua*.

Sprague & Hutch. in J. Linn. Soc., Bot. 39: 268, t.17, fig. 10 (1909); Wild in F.Z. 2,1: 75 (1963); Wild & Gonçalves in F.M. 28: 49 (1969); Ross, Fl. Natal 241 (1972).

T. annua L., Mant. 73 (1767); Mast. in F.T.A. 1: 256 (1868); Burtt Davy, Fl. Transv. 1: 257 (1926); Exell & Mendonça, C.F.A. 1: 236 (1951); Roessler in F.S.W.A. 81: 10 (1969).

Fruits and aculei quite glabrous. Fig. 2: 2.

Recorded from the Cape, Natal, Transvaal, Swaziland and South West Africa/Namibia, as well as all the areas listed for the species as a whole. In rather shady situations at forest edges and in bushy, shady places. Often also a ruderal or weed of cultivation. Map 14.

Vouchers: Bolus 10969; Dinter 4274; Galpin 11829.

(b) forma *piliger*a Sprague & Hutch. in J. Linn. Soc., Bot. 39: 268 (1909); Wild in F.Z. 2,1: 75 (1963); Wild & Gonçalves in F.M. 28: 49 (1969); Ross, Fl. Natal 241 (1972). Syntypes: Natal, Great Noodsberg, Wood 4132 (K!); Malagasy Republic, Baron 992; Parker (K!).

Included here are plants in which the body and base of the prickles on the fruit are pilose with long weak hairs.

Known from Natal, Transvaal, South West Africa/Namibia, the Malagasy Republic, Zambia, Zimbabwe, Mozambique, and East Africa. Does not appear to differ in habit and ecology from forma *annua*. Map 14.

Vouchers: Harding 4/17; Mogg 14988.

8. *Triumfetta pilosa* Roth, Nov. Pl. Sp. 223 (1821); Mast. in F.T.A. 1: 257 (1868); Harv. in F.C. 1: 227 (1860); Sprague & Hutch. in J. Linn. Soc., Bot. 39: 273, t.17, fig. 12 (1909); Marloth, Fl. S. Afr. 22: t.60B (1925); Wild in F.Z. 2,1: 76 (1963); Wild & Gonçalves in F.M. 28: 50 (1969). Type: India, Heyne in Herb. Roth (holo.); K, Herb. Wallich!

Small shrub of about 1,3 m tall; stems often quadrangular, sparingly stellate-pubescent or densely tomentose, hair bases often tubercled. Leaf-blade 50–120 × 30–70 mm, ovate to oblong-lanceolate, acutely acuminate or acute at the apex, rounded to cordate at the base, coarsely serrate, puberulous, pubescent or densely tomentose especially below; petiole up to about 50 mm long, diminishing upwards; stipules up to 8 mm long, subulate. Inflorescence foliose, of small cymes crowded

at the nodes; peduncles and pedicels very short, up to 5 mm long but often less; bracts 2–4 mm long, linear to lanceolate-linear, setulose-pubescent. Sepals 7–10 mm long, linear, pubescent or tomentose, subapical horn very short, up to about 1 mm long. Petals yellow, slightly shorter than the sepals, linear to oblanceolate-linear, ciliate at the base. Androgynophore up to 0,75 mm tall, glands opposite base of petals orbicular; annulus densely hirsute above. Stamens 8–10. Ovary globose, echinulate, 3–4-locular. Capsule 15–27 mm in diam. including the prickles; prickles 5–10 mm long, pilose or glabrous, uncinatate at the apex.

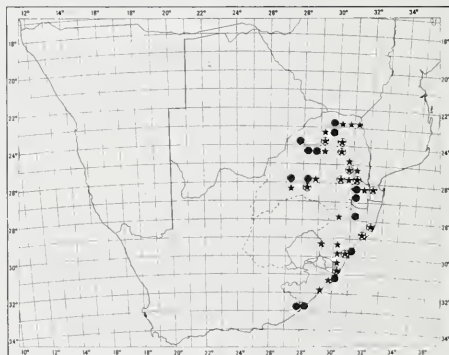
Widely distributed in Africa, the Malagasy Republic, India, Malaysia and China. It has not been ascertained whether the Roth Herbarium is still available at Oldenburg, but there is no reason to doubt the authenticity of the isotype in Herb. Wallich.

For key to varieties see key to species.

(a) var. *tomentosa* Szyszyl. ex Sprague & Hutch. in J. Linn. Soc., Bot. 39: 273 (1909); Burtt Davy, Fl. Transv. 1: 257 (1926); Mendonça & Torre, Contr. Conhec. Fl. Mocamb. 1: 23 (1950); Wild in F.Z. 2,1: 77 (1963); Wild & Gonçalves in F.M. 28: 50 (1969); Ross, Fl. Natal 241 (1972). Syntypes: Natal, between Pinetown and Umbilo, Rehmann 8050 (K!; Z!); 8068 (K!; Z!).

T. tomentosa sensu E. Mey. ex Harv. in F.C. 1: 228 (1860) in syn. sub *T. pilosa*.

T. pilosa sensu Hutch., Botanist in S. Afr. 464 (1946).



MAP 15.— * *Triumfetta pilosa* var. *tomentosa*
● *Triumfetta pilosa* var. *effusa*
⊙ *Triumfetta pilosa* var. *effusa* and
var. *tomentosa*

Stems densely brown tomentose. *Leaf-blade* 60–120 × 30–75 mm, mostly ovate, densely and shortly stellate-tomentose above, more densely so below. *Buds* tomentose. *Prickles* on fruit pilose.

A variety of open woodland, roadsides and waste places. Occurs in the Cape, Transvaal, Natal, Swaziland and also in Zambia, Zimbabwe, Malawi and Mozambique. Map 15.

Vouchers: *Compton* 26631; *Galpin* 2893; 8929; *Schlieben* 10164.

(b) var. *effusa* (*E. Mey. ex Harv.*) *Wild* in *F.Z.* 2,1: 77 (1963); *Wild & Gonçalves* in *F.M.* 28: 52 (1969); *Ross*, *Fl. Natal* 241 (1972). Syntypes: Natal, *Drège* (BM!; K!); *Williamson* (TCD!).

T. effusa *E. Mey. ex Harv.* in *F.C.* 1: 228 (1860).—var. *leiocalyx* *Sprague & Hutch.* in *J. Linn. Soc., Bot.* 39: 275 (1909). Syntypes: Natal, Pinetown, *Wood* 254 (BM!; K!); Cape, Rooi Vaal, *Flanagan* 456 (K!).

T. pseudorhomboidea *Szyszl., Polypet. Thalam. Rehm.* 59 (1887). Type: Transvaal, *Rehmann* 6317 (Z, holotype).

Leaf-blade from sparsely stellate-pubescent to densely stellate-tomentose, especially below. *Prickles* on fruits quite glabrous or rarely with few sparse hairs near the base.

Fig. 2: 4.

Ecology similar to that of var. *tomentosa*. Recorded from Cape, Natal, the Transvaal, Swaziland, as well as from Zambia, Zimbabwe, Malawi and Mozambique. Map 15.

Vouchers: *Galpin* 9455; 13715; *Rodin* 4046; *Schlechter* 2226.

Throughout the range of distribution of this variety occasional specimens occur which have a few sparse hairs at the base of the prickles. These intermediates indicate that this taxon is best treated as a variety of *T. pilosa* rather than as a distinct species.

9. *Triumfetta delicatula* *Sprague & Hutch.* in *J. Linn. Soc., Bot.* 39: 257 (1909); *Roessl.* in *F.S.W.A.* 81: 10 (1969). Syntypes: Angola, Huilla on Monyno mountain, *Antunes* 141 (K!); Mounyino, *Antunes* 316.

Small shrubs up to 0.8 m tall; stems terete, stellate-pubescent or tomentose when young. *Leaf-blade* 25–50 × 15–20 (–25) mm, elliptic to elliptic-lanceolate, apex acute to obtuse, base broadly cuneate, margin usually regularly serrate, stellate-pubescent on both sides, venation reticulate and tertiary veins often visible; petiole up to 15 mm long, stellate-pubescent or tomentose; stipules 3–4 mm long, subulate, pubescent. *Inflorescence* of axillary, 2–5-flowered, subumbellate cymes in the upper axils; peduncle 2–4 mm long, slender, pubescent; pedicels up to 3 mm long;

bracts c. 3 mm long, subulate, pubescent. *Sepals* 5–6 mm long, linear, apex slightly hooded and with subapical horn about 0.5 mm long, stellate-pubescent to puberulous. *Petals* yellow, slightly shorter than the sepals, linear-oblancoate, minutely ciliate at the base. *Androgynophore* very short, about 0.2 mm long, glands opposite to the petal bases almost orbicular; annulus with its margin reflexed and ciliate. *Stamens* (8–) 10. *Ovary* globose, echinulate, 4-locular. *Capsule* about 10 mm in diameter including the prickles, globose, glabrous; prickles about 3 mm long, slightly broadened towards the base and with uncinat apex.

Rocky slopes in southern Angola, northern and central South West Africa/Namibia. Map 16.

Vouchers: *Seydel* 2668; *Volk* 991.

The fruits of *T. delicatula* are similar in size and their uncinat glabrous aculei to those of a form of *T. tomentosa* (no. 10) from Zimbabwe which has glabrous fruits. *T. tomentosa* is mainly distinguished from *T. pilosa* by its straight or falcate apices of the prickles, but *T. delicatula* differs from both these species by its much smaller leaves.

10. *Triumfetta tomentosa* *Boj.* in *Bouton, Douz. Rapp. Ann. Maur.* 19 (1842); *Mast.* in *F.T.A.* 1: 258 (1868); *Sprague & Hutch.* in *J. Linn. Soc., Bot.* 39: 260, t. 17, fig. 5 (1909); *Exell & Mendonça, C.F.A.* 1: 225 (1951); *Wild* in *F.Z.* 2,1: 72 (1963); *Wilczek* in *F.C.B.* 10: 58 (1963); *Roessl.* in *F.S.W.A.* 81: 11 (1969); *Wild & Gonçalves* in *F.M.* 28: 45 (1969). Syntypes: Mauritius, cult. ex Kenya (Mombassa Island), *Bojer* (K!).

T. tomentosa *Boj., Hort. Maurit.* 43 (1837), nom. nud. *T. pilosa* var. *tomentosa* (*Boj.*) *Szyszl., Polypet. Thalam. Rehm.* 59 (1887), excl. spec. cited.

T. holosericea *Schin.* in *Bull. Herb. Boissier sér.* 2: 8: 702 (1908). Type: South West Africa/Namibia, Waterberg, *Dinter* 384.

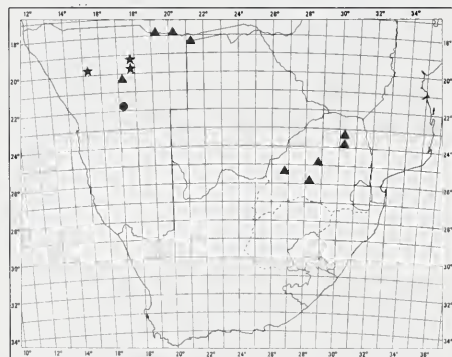
Small shrub occasionally up to 3 m tall, branches with a brown woolly tomentum. *Leaf-blade* 50–120 × 25–70 mm, ovate or lanceolate-ovate, sometimes slightly three-lobed, acute at the apex, cordate or subcordate at the base, greyish brown tomentose, more densely so beneath, margins irregularly serrate; petiole up to 60 mm long, woolly; stipules about 7 mm long, linear-lanceolate, densely pubescent. *Inflorescence* foliose with the leaves narrower and progressively smaller upwards than the cauline ones, composed of small cymes crowded at the nodes; peduncles and pedicels very short, about 2 mm long or less, densely pilose or tomentose; bracts 3–

4 mm long, linear, tomentose. *Sepals* 4,5–8,5 mm long, linear, pubescent outside below but tomentose in the upper part, subapical horn 0,2–0,5 mm long, densely stellate-pubescent. *Petals* 4–7 mm long, linear-oblan-ceolate, rounded at the apex, villous at the base. *Androgynophore* 0,5 mm tall with sub-orbicular glands opposite the petal bases; annulus densely ciliate at the margin. *Stamens* 8–10; filaments 6–7 mm long. *Ovary* 4-locular, globose, densely setose. *Capsule* 10–15 mm in diam. including the prickles; prickles numerous, pilose with simple hairs or almost glabrous, terminal setae single, straight or slightly curved.

Often in fallows in old cultivations. In South West Africa/Namibia and throughout tropical Africa, also in south tropical America. Map 16.

Vouchers: *Dinter* 5602; *Giess* 12545.

This species is very difficult to distinguish from some varieties of *T. pilosa* (no. 8) unless it is in fruit.



MAP 16.—● *Triumfetta delicatula*
* *Triumfetta tomentosa*
▲ *Triumfetta angolensis*

11. *Triumfetta angolensis* *Sprague & Hutch.* in J. Linn. Soc., Bot. 39: 256 (1909); *Exell & Mendonça*, C.F.A. 1, 2: 231 (1951); *Wild* in F.Z. 2,1: 71 (1963); *Roessl.* In F.S.W.A. 81: 10 (1969); *Wild & Gonçalves* in F.M. 28: 44 (1969). Type: Angola, Huila, *Welwitsch* 1411 (BM, holo.!; COI!; LISU!).

Erect or rather lax perennial herb about 0,6 m tall branching from the base, stems stellate-pilose. *Leaf-blade* up to 65 × 30 mm elliptic, ovate-elliptic or lanceolate-oblong, apex subacute or rounded, base subcordate, rounded or broadly cuneate, serrate or crenate-serrate, both sides sparsely stellate-pilose with some simple hairs, a little more densely so below, nerves rather raised beneath; petiole up to 13 mm long, stellate-pilose; stipules about 3 mm long, subulate, setose-pilose. *Inflorescence* leafy, of 2–5 small cymes per node; peduncles about 3 mm long, pubescent; pedicels similar, 2–3 mm long, usually three together, pilose; bracts up to 2,5 mm long, linear-lanceolate, forming an involucre, setose-pilose. *Sepals* reddish brown, 5 mm long, linear, stellate-pubescent outside, subapical horn 0,5 mm long, bearing simple setose hairs. *Petals* yellow, about 5 mm long, oblanceolate, rounded at the apex, ciliate just above the base. *Androgynophore* 0,5 mm tall with transversely elliptic-oblong glands opposite the petal bases; annulus with a ciliate margin. *Stamens* 9–10; filaments about 5 mm long. *Ovary* subglobose, 4-locular. *Capsule* about 8 mm in diam. including the prickles; prickles broadening to the base, shortly pilose, with 2–5 spreading setae at the apex.

Recorded from the Transvaal and South West Africa/Namibia. Also recorded from Zambia, Zimbabwe, Angola and Mozambique. Most commonly found in partial shade and often by rivers. Map 16.

Vouchers: *De Winter & Marais* 4569; 4948; *Galpin* M. 42; *Leistner* 542.

3. SPARRMANNIA

Sparrmannia L.f., Suppl. 41 (1781); DC., Prodr. 1: 503 (1824); Harv. in F.C. 1: 223 (1860); Mast. in F.T.A. 1: 260 (1868); Burt Davy, Fl. Transv. 1: 253 (1926); Weim. in Svensk bot. Tidskr. 27: 400 (1933); Exell & Mendonça, C.F.A. 1: 238 (1951); Wild in F.Z. 2, 1: 78 (1963); Wilczek in F.C.B. 10: 76 (1963); Wild & Gonçalves in F.M. 28: 52 (1969); R. A. Dyer, Gen. 1: 352 (1975). Type species: *S. africana* L.f.

Large shrubs, all parts stellate-pubescent or glabrescent, sometimes with intermixed simple hairs. *Leaves* alternate, petiolate; 3–7-angled or -lobed, palmately nerved, crenate-dentate, crenate or serrate; stipules deciduous, subulate or setaceous. *Inflorescence* of extra-axillary or leaf-opposed umbels on longish peduncles in the upper axils; bracts similar to the stipules. *Sepals* 4, lanceolate, deciduous. *Petals*, 4, oblanceolate, eglandular. *Stamens* numerous with nodose filaments, outer stamens often sterile and moniliform. *Androgynophore* obsolete. *Ovary* 4–5-locular; ovules numerous; style slender, glabrous with a 4–5-toothed stigma. *Capsule* globose, oblong-ovoid or ellipsoid, 4–5-valved, covered with rigid bristles.

About 7 species confined to Africa and the Malagasy Republic, 2 of which occur in Southern Africa.

The correctness of the above spelling as against '*Sparrmannia*' is fully explained by Brenan in Mem. N.Y. bot. Gdn 8, 3: 229 (1953).

- 1 Sepals about 17 mm long; many outer stamens sterile; leaves up to 270 × 210 mm, not lobed or with acute or acuminate lobes 1. *africana*
 1 Sepals about 10 mm long; outer sterile stamens few or sometimes absent; leaves up to 130 × 100 mm, lobes long-acuminate 2. *ricinocarpa*

1. **Sparrmannia africana** L.f., Suppl. 265 (1781); Sims in Curtis's bot. Mag. 15: t.516 (1801); DC., Prodr. 1: 503 (1824); Harv. in F.C. 1: 224 (1860); K. Schum. in Natürl. Pflfam. 3,6: 66, fig. 9A (1895); Sim. For. Fl. Cape Col. 148, t.19, fig. 1 (1907); Marloth, Fl. S. Afr. 2: 170, 248, fig. 116, 162 (1925); Weim. in Svensk bot. Tidskr. 27: 400 (1933); Courtenay-Latimer & Smith, Flower. Pl. Tsitsikama For. t.43 (1967); Killick in Flower. Pl. Afr. 42: t. 1663 (1973). Type: Cape, *Sparrmann* (LINN 677. 1, holo.!).

Shrub up to about 7 m tall, much branched and bushy, wood softish; young branches hispid, with long patent hairs. *Leaf-blade* up to 270 × 210 mm or more, ovate to very broadly ovate or orbicular, usually (3–) 5–7–9-lobed, but often entire near the inflorescence, lobed up to a quarter of the way, lobes acuminate except the basal ones which are blunt or acute, apex acuminate, base cordate, margin irregularly crenate, with hispidulous hairs on both sides, some hairs simple, some stellate, sometimes with additional short crisped hairs on the main nerves, 7–11-nerved from the base; petiole up to 150 mm long or more, patently hispid; stipules up to 15 mm long, subulate, hispid. *Flowers* white in about 20-flowered extra-axillary pedunculate umbels towards the ends of the branches; peduncles patently hispid with long hairs, up

to about 100 mm long; pedicels similar but about 30 mm long, articulated in the upper half and often more densely hairy; bracts up to 15 mm long, linear with a subulate apex, hispidly hairy. *Sepals* white, membranous, about 17 × 4 mm, lanceolate, apex acute, pilose with long simple hairs and short stellate hairs outside. *Petals* white, about 25 × 15 mm, obovate. *Stamens* very numerous with many outer ones sterile and moniliform in the upper half, fertile stamens numerous also; filaments about 10 mm long, barren filaments yellow with purple tips, fertile filaments purple. *Ovary* ovoid, densely setulose; style about 10 mm long, glabrous; stigma very minutely 4–5-toothed. *Capsule* about 20 mm in diam. including the bristles, subglobose, sparsely setulose; bristles about 17 mm long, with a rigid setulose tip, glandular; seeds dark brown, about 3,5 × 2,5 mm, ellipsoid and tapering to one end; testa rugulose. Fig. 3: 1.

Apparently confined to the Cape Province. A species of forest edges and rocky hillsides. Sometimes cultivated because of its handsome flowers. Map 17.

Vouchers: Galpin 3798; Muir 3533; Rodin 1310.

2. **Sparrmannia ricinocarpa** (Eckl. & Zeyh.) Kunze, Rev. Gen. 3, 2: 26 (1898); Burt Davy, Fl. Transv. 1: 253 (1926); Brenan in Mem. N.Y. bot. Gdn 8: 229 (1953); White, For. Fl. N. Rhod. 239, t.6 (1972); Wild in F.Z. 2,1: 78 (1963); Wild & Gonçalves in

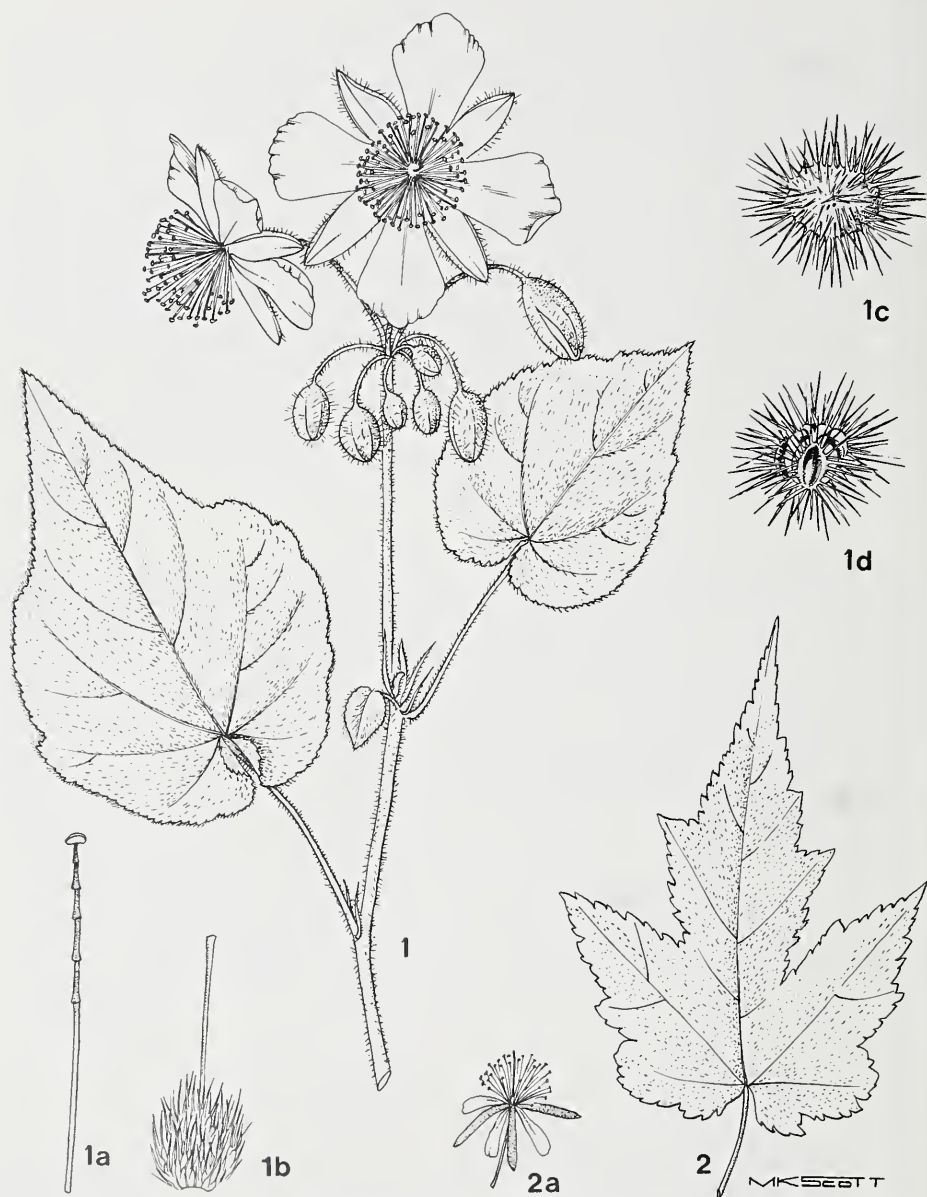


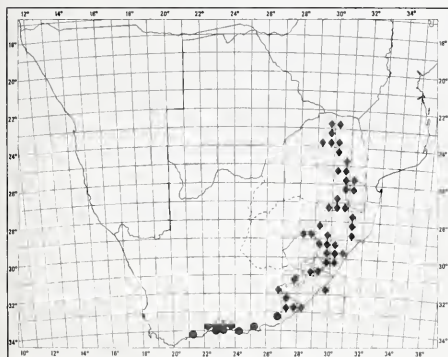
FIG. 3.—1, *Sparrmannia africana*, flowering twig, $\times 1$; 1a, stamen, $\times 5$; 1b, ovary, $\times 5$ (all from Thode A750); 1c fruit closed, $\times 1$; 1d, fruit dehiscent, $\times 1$ (both from Bos 768). 2, *Sparrmannia ricinocarpa*, leaf, $\times 1$; 2a, flower, $\times 1$ (Müller 2353).

F.M. 28: 53 (1969); Ross, Fl. Natal 240 (1972); Compton, Fl. Swaziland 354 (1976). Type: Eastern Cape Province, *Ecklon & Zeyher* (Herb. Sond., not seen).

Urena ricinocarpa Eckl. & Zeyh., Enum. 37 (1835); Presl, Bot. Bemerck. 19 (1844). *Sparrmannia palmata* E. Mey. ex Harv. in F.C. 1: 224 (1860); Bak. f. in J. Linn. Soc., Bot. 40: 33 (1911); Eyles in Trans. R. Soc. S. Afr. 5: 410 (1916); Marloth, Fl. S. Afr. 2,2: t.60D (1925), nom. illegit. Type: as above.

S. abyssinica Hochst. ex A. Rich. var. *micrantha* Burret in Mildbr., Wiss. Ergebn. dt. Zent.-Afr.-Exped. 1907-08, 2: 494 (1910). *S. ricinocarpa* subsp. *micrantha* (Burret) Weim. in Svensk bot. Tidskr. 27: 404, 408 (1933); Bot. Notiser 1936: 37 (1936); Exell & Mendonça. C.F.A. 1: 238 (1951); Wilczek in F.C.B. 10: 77 (1963). Type: Tanzania, Kahama, *Mildbraed* 1626 (B, holo.†).

S. witte Staner in De Wild. & Stancr. Contr. Fl. Kat. Suppl. 4: 55 (1932). Type: Congo, Muhavura, *De Witte* 1963.



MAP 17.—● *Sparrmannia africana*
◆ *Sparrmannia ricinocarpa*

Slender shrub or scrambler up to 3 m tall; stems slender with spreading, simple hairs and shorter stellate hairs. *Leaf-blade* 30–130 × 15–100 mm, 3–7-lobed, cordate or cordate-sagittate and 5–7 nerved at the base, lobed about half-way or three quarters, middle lobe the longest, lobes, at least the middle one, long-acuminate, inciso-sinuate, crenate-dentate and often with secondary lobing, stellately or simply pubescent on both sides or

with a mixture of both; petiole up to 80 mm long, pubescent; stipules up to 8 mm long, setaceous, pubescent. *Inflorescence* of extra-axillary or leaf-opposed 6–20-flowered umbels; peduncles up to 80 mm long, pubescent; pedicels pubescent, articulated in the upper half and more densely pubescent above the articulation; bracts up to 7 mm long, subulate to lanceolate, pubescent. *Sepals* about 10 mm long, lorate, subacute at the apex, pubescent and green on the back, white or purplish inside. *Petals* white, the same length as the sepals or slightly longer, oblanceolate to oblanceolate-oblong. *Stamens* many (about 50), filamentous, about 8 mm long, the majority with numerous nodose swellings along the filament, a few outer ones sometimes sterile. *Ovary* ovoid, echinulate-setulose, many-ovuled; style 7–8 mm long, slender, glabrous, stigma shortly five-toothed. *Capsule* ellipsoid 4–5-valved, covered with rigid bristles about 10 mm long, overall dimensions 20–25 × 15–20 mm, brown, sparsely stellate-pubescent, loculi opening from the apex; seeds dark brown, about 2.5 × 1.5 mm, ellipsoidally biconical. Fig. 3: 2.

A rather straggling plant that yields a good fibre. Found in the higher rainfall areas of the Cape, Natal, Orange Free State, Lesotho, Transvaal and Swaziland. Also northwards to Angola, Cameroon, East Africa and Ethiopia. Often at forest edges or in forest clearings. Map 17.

Vouchers: *Acocks* 9562; *Compton* 25515; *Galpin* 788; 10193; 13269.

Weimarck (l.c.) has divided this species into several subspecies of which subsp. *ricinocarpa* is the one found in Southern Africa. However, some material from Malawi also agrees best with subsp. *ricinocarpa* although on phytogeographical grounds it ought to fall within the range of variation of subsp. *micrantha*. Similarly, *Rodin* 4045 (K; PRE) from the Soutpansberg agrees best with subsp. *micrantha*, not subsp. *ricinocarpa*. The phytogeographical classification of these subspecific taxa is not, therefore, entirely reliable. It may be that they should be treated as varieties but until the position is better understood it is better to consider this as one very variable species. Although I have not been able to see the type of this species it is evident that Harvey (l.c.) compared the *Ecklon & Zeyher* type with the Drège specimen, which he cites in publishing his illegitimate and superfluous name *S. palmata*, and I have been able to consult this latter specimen in Herb. Kew.

4953

4. CORCHORUS

Corchorus L., Sp. Pl. 529 (1753); Gen. Pl. edn 5: 234 (1754); DC., Prodr. 1: 504 (1824); Harv. in F.C. 1: 228 (1860); Mast. in F.T.A. 1: 261 (1868); Burtt Davy, Fl. Transv. 1: 257 (1926); Exell & Mendonça, C.F.A. 1: 239 (1951); Hutch. & Dalz., F.W.T.A. edn 2, 1,2: 308 (1958); Wild in F.Z. 2,1: 82 (1963); Wilczek in F.C.B. 10: 84 (1963); Roessl. in F.S.W.A. 81: 1 (1969); Wild & Gonçalves in F.M. 28: 55 (1969); R. A. Dyer, Gen. 1: 353 (1975). Type species: *C. olitorius* L.

Herbs or small shrubs, sometimes with annual stems from a woody rootstock, with simple or stellate hairs. *Leaves* alternate, serrate, dentate, repand or lobed with the basal teeth often prolonged into long setaceous points; petioles usually more densely pubescent on the upper side; stipules lateral, usually setaceous or subacute. *Inflorescence* of bracteate, pedunculate cymes more or less opposed to the leaves, or the peduncle obsolete. *Flowers* bisexual. *Sepals* 4–5, usually narrow, often caudate at the apex. *Petals* yellow, as long as the sepals, obovate, oblanccolate or linear, usually with a short basal claw ciliolate on the margin. *Stamens* 7–many, filamentous, borne on a very short, glabrous androgynophore which is annular at the apex, the stamens arising between the annulus and ovary. *Ovary* 2–5-locular, with 2 to many axile ovules in each chamber; style glabrous with a cup-shaped or slightly 2–6-lobed or capitate-fimbriate stigma. *Fruit* an elongated or subglobose capsule, glabrous or hairy, smooth, bristly or prickly, straight or curved, loculicidally 2–5 valved, sometimes with transverse septa within, 2–many-seeded. *Seeds* dark brown or black, pendulous or horizontal, quadrate, ellipsoid, cylindric or irregularly hemispherical; embryo usually curved; cotyledons flat; endosperm fleshy.

A genus of about 100 species widely distributed through the tropics and subtropics; 15 species are recognized in Southern Africa. Several species produce useful fibres and several others are well-known annual weeds.

Although experimental sowings have been made with *C. capsularis* L., there is no evidence that the species has become naturalized in South Africa.

1 Leaves variously pubescent or glabrous but not tomentose:

- 2 Capsule 10-ribbed, 5-valved 1. *C. olitorius*

2 Capsule 3–4-valved:

- 3 Capsule with 3 spreading horns at the apex 3. *C. tridens*

3 Capsule rostrate or blunt at the apex, without diverging horns:

- 4 Leaves pinnatipartite, lobed four-fifths of the way to the midrib 9. *C. pinnatipartitus*

4 Leaves serrate or crenate but not lobed:

5 Annual herbs:

6 Peduncles obsolete or up to 2 mm long, not filiform; leaves not linear:

- 7 Capsules up to 70 mm long, held erect; valves minutely scabrous 2. *C. trilocularis*

- 7 Capsules up to 25 mm long, usually curved, not held erect, angles mucronate or sharply toothed 7. *C. schimperi*

6 Peduncles filiform, up to 20 mm long; leaves linear 10. *C. longipedunculatus*

5 Perennial herbs with annual, often prostrate stems from a woody rootstock, or a bushy perennial up to about 0,6 m tall:

8 Fruiting pedicel straight or more or less straight:

9 Fruit valves hispidulous, rarely glabrescent; lateral nerves of leaves (excluding basal nerves) in

7–about 20 pairs; perennial herb with annual or little-branched stems from a woody rootstock ..

- 4. *C. confusus*

9 Fruit valves glabrous or sparsely stellate-puberulous when young; lateral nerves of leaves (excluding basal nerves) in 5 (–7) pairs; much-branched shrublet about 0,6 m tall 11. *C. angolensis*

8 Fruiting pedicel curved:

10 Leaves glabrous or hispid to strigose, often with bulbous-based hairs:

- 11 Leaves usually linear to narrowly oblong-lanceolate, if ovate then margin coarsely crenate-dentate 5. *C. asplenifolius*

- 11 Leaves ovate-oblong to broadly elliptic, strigose, margin finely crenulate 6. *C. psammophilus*

- 10 Leaves densely sericeo-villous on the lower surface, ovate to narrowly ovate-oblong, margin coarsely crenate-dentate 8. *C. sulcatus*
- 1 Leaves yellowish or greyish tomentose, at least below:
- 12 Capsule cylindric or, if narrowly ellipsoid, with softish plumose bristles shorter than 2 mm:
- 13 Leaves ovate, grey-green; nerves in about 4 pairs 12. *C. merxmuellerei*
- 13 Leaves narrowly oblong or narrowly elliptic to oblong or oblong-lanceolate, drying yellowish or brownish, nerves in 6–15 pairs:
- 14 Indumentum very shortly and smoothly velvety; nerves rather inconspicuous, in 13–15 pairs; bracts up to 2 mm long 13. *C. velutinus*
- 14 Indumentum often rather tufted and coarse or thick and felted; nerves conspicuously raised below, in 6–10 pairs; bracts up to 8 mm long 14. *C. kirkii*
- 12 Capsule broadly ovoid and glabrous or ellipsoid with stiff plumose bristles about 5 mm long 15. *C. junodii*

1. ***Corchorus olitorius* L., Sp. Pl. 529 (1753);** Mast. in F.T.A. 1: 262 (1868); Exell & Mendonça, C.F.A. 1: 240 (1951); Wild in F.Z. 2,1: 82 (1963); Wilczek in F.C.B. 10: 85 (1963); Roessl. in F.S.W.A. 81: 4 (1969); Wild & Gonçalves in F.M. 28: 57 (1969); Ross, Fl. Natal 240 (1972). Type: cult. specim. in Herb. Cliff. (BM, lecto!).*

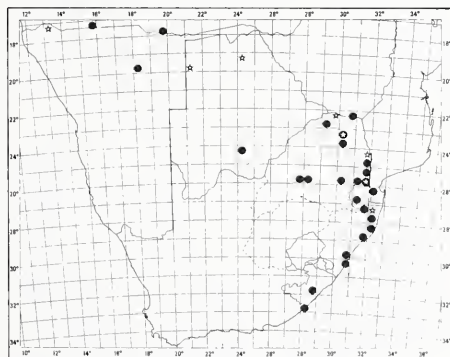
Coarse erect annual up to 2 m tall; young branches somewhat angular or sulcate, glabrous. *Leaf-blade* 30–100 × 20–50 mm, ovate-lanceolate to lanceolate, thin-textured, apex acute, rounded at the base, margin serrate or serrate-crenate, the two lowest serrations prolonged as setaceous appendages about 10 mm long, glabrous on both sides or setulose on the nerves beneath; petiole up to 50 mm long, pubescent on the upper side; stipules about 10 mm long, setaceous, glabrous. *Inflorescence* of small 2–3-flowered cymes opposite the upper leaves; peduncles very short, about 1 mm long, glabrous; pedicels 1–2 mm long; bracts about 5 mm long, setaceous, glabrous. *Sepals* about 7 mm long, linear, thin-textured, bluntly caudate at the apex, glabrous. *Petals* yellow, about 7 mm long, oblanceolate, with a short basal claw with ciliate margin. *Androgynophore* about 0.5 mm tall; annulus with an undulated margin clasping the base of the ovary. *Stamens* filamentous, about 20. *Ovary* cylindric, 10-ribbed, very minutely setulose and glandular,

5-locular, many-ovuled. *Capsule* 20–80 mm long, cylindric, appressed to the stem, straight or slightly curved, somewhat torulose, 10-ribbed, with a straight, undivided beak about 12 mm long, inner surface of valves transversely septate; seeds blackish, about 2.3 × 2 mm, angular. Fig. 4: 4.

Recorded from South West Africa/Namibia, Natal and Transvaal. A pantropical species widely cultivated for its fibre (jute) in India and Asia, but also widely distributed as a weed of cultivation. Map 18.

Vouchers: Codd 4130; Robertson 132.

2. ***Corchorus trilocularis* L., Syst. Nat. edn 12,2: 369 (1767); Mant. 77 (1767); Harv. in F.C. 1: 229 (1860); Mast. in F.T.A. 1: 262 (1868), pro parte; Szyszyl., Polypet, Thalam. Rehm. 61 (1887); Burt Davy, Fl. Transv. 1: 257 (1926); Exell & Mendonça, C.F.A. 1: 239 (1951); Wild in F.Z. 2,1: 84 (1963); Wilczek in F.C.B. 10: 88 (1963); Compton, Fl. Swaziland 55 (1966); Roessl. in F.S.W.A. 81: 4 (1969); Wild & Gonçalves in F.M. 28: 58 (1969); Ross, Fl. Natal 240 (1972). Type: Arabia, *Forsskal* (see notes below).**



MAP 18. — ★ *Corchorus olitorius*
● *Corchorus trilocularis*
⊙ *Corchorus trilocularis* and *C. olitorius*

* The protologue of this species would lead one to expect that the type would be found in the Hermann Herbarium or among Hermann's Icones. No specimen of this species can be found there, however, although Linnaeus's description of the species leaves no doubt of its identity. The specimen in Herb. Hermann to which Linnaeus does refer has a 3-valved capsule and so does not fit his description and must be excluded. However, Linnaeus's next reference is to a good specimen in the Hortus Cliffortianus which agrees in its 5-valved capsule with Linnaeus's description and this specimen must be chosen as the lectotype of *C. olitorius*.

Annual herb up to about 1 m tall, erect and branching or sometimes with decumbent branches if the main stem is cut down or browsed; branchlets often purplish and in the young parts with a spreading, setulose pubescence not confined to one side of the stem. *Leaf-blade* 20–120 × 5–35 mm, lanceolate, oblong or narrowly oblong, apex acute or subacute, rounded or broadly cuneate at the base, margin crenate-serrate, usually with a pair of setaceous basal lobes, glabrous or setulose-pilose on both sides especially on the nerves; petiole up to 25 mm long low down on the stems but usually rather shorter, with a spreading, setulose pubescence especially on the upper side; stipules about 10 mm long, setaceous, setulose-pubescent. *Inflorescence* of 1–3-flowered cymes borne opposite the upper leaves; peduncles about 1 mm long but lengthening in fruit, setose-pubescent; pedicels similar, about 1 mm long. *Sepals* 6–10 mm long, narrowly lanceolate, caudate at the apex as a rule, often somewhat keeled, setulose-pubescent particularly on the keel. *Petals* yellow, oblanceolate, as long as the sepals, with a short basal claw with ciliate margin. *Androgynophore* about 0.5 mm long, extended above into a slightly undulate annulus. *Stamens* filamentous, 30–40. *Ovary* trigonously subcylindric, very shortly pubescent, 3- or occasionally 4-locular; style 1–1.5 mm long, glabrous. *Capsule* many-seeded, 25–70 mm long, erect, straight or slightly curved, 3–4-angled, 3–4-valved; valves scabrous and sometimes somewhat torulose outside, with a series of hollows inside fitting the seeds; seeds dark brown, 1–1.3 × 0.7–1 mm, oblong-ovoid. Fig. 4: 2.

A widespread introduced weed in Natal, the eastern Cape, the Transvaal, South West Africa/Namibia, Swaziland and also throughout tropical Africa and in Asia and the Middle East. Map 18.

Vouchers: Flanagan 2543; Schlechter 11735; Ward 329.

This species is very variable in leaf-shape, size, pubescence and, particularly if it is grazed or trampled, becomes semiprostrate and can be confused with *C. asplenifolius* (no. 5). It is, however, always an annual, whilst *C. asplenifolius* is always a perennial. See also notes under *C. confusus* (no. 4).

The typification of this species is not easy. It is clear that Linnaeus based his description on a Forsskal specimen but if this was ever present in the Forsskal collections in Copenhagen it is not there now (see Christensen in Dansk. bot. Arkiv. 4.3: 20, 1922). There is, however, a sheet of this species in the Linnaean Herbarium, London, which was prepared from a specimen cultivated in Uppsala Botanic Garden. If necessary, this specimen (Hrb.

Linn. 691.3) could be chosen as a suitable neotype for *C. trilocularis*.

3. *Corchorus tridens* L., Mant. Alt. 566 (1771); Mast. in F.T.A. 1: 264 (1868); Burt Davy, Fl. Transv. 1: 257 (1926); Exell & Mendonça, C.F.A. 1: 241 (1951); Wild in F.Z. 2,1: 88 (1963); Wilczek in F.C.B. 10: 87 (1963); Compton, Fl. Swaziland 55 (1966); Wild & Gonçalves in F.M. 28: 64 (1969). Type: Not clear, see note below.

Annual herb about 0.6 m tall, usually erect but with its older branches rather spreading, branchlets at first rather compressed or angular, glabrous or sparsely pilose. *Leaf-blade* 25–110 × 6–45 mm, oblong to lanceolate, acute at the apex, rounded at the base, margin serrate or serrate-crenate, glabrous or sparsely setulose-pubescent on the nerves; petiole up to 20 mm long, pilose on the upper side; stipules up to 10 mm long, setaceous, glabrous. *Inflorescence* of 1–3-flowered leaf-opposed cymes; peduncles up to 1 mm long, glabrous; pedicels similar, up to 1 mm long; bracts 1–2 mm long, setaceous, glabrous. *Sepals* about 5 mm long, linear to slightly widened in the upper half, bluntly acuminate, glabrous. *Petals* yellow, as long as the sepals, very narrowly oblanceolate, with a minute basal claw about 0.3 mm long minutely ciliate on the margin. *Androgynophore* almost obsolete but annulus visible and clasping the base of the ovary. *Stamens* 8–10, filamentous. *Ovary* trigonously cylindric, papillose, 3-locular; style about 2 mm long, glabrous. *Capsule* up to about 40 mm long, held more or less erect, straight or slightly curved, usually somewhat ribbed, sparsely and minutely setulose-scarid, terminated by three spreading horns about 1 mm long; valves inside only shallowly pitted to receive the seeds; seeds numerous, dark brown, about 1.4 × 0.8 mm, cylindric or somewhat quadrangular-cylindric. Fig. 4: 10.

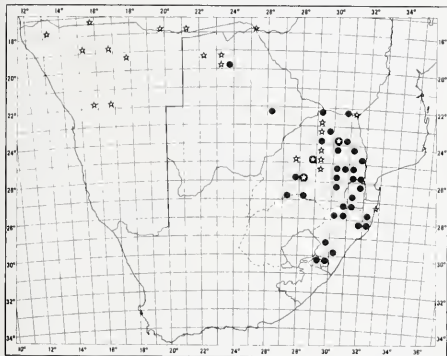
Widespread as an annual weed in the tropics and subtropics of the Old World. Recorded in our area from Natal, Swaziland, Transvaal and South West Africa/Namibia. Map 19.

Vouchers: Codd 5400; De Winter & Leistner 5403; Schlechter 4527.

The typification of this species is not very obvious. There appears to be no specimen of this species in the Linnaean Herbarium which could be the type and Linnaeus names no collector or country of origin. The Plukenet drawing cited by Linnaeus shows no fruits and so would be unsatisfactory as a type. However, the original description clearly relates to this species and the other

drawing cited by Linnaeus (Burm. f., Fl. Indica 123, t. 37 fig. 2, 1768) is a very good representation of *C. tridens*. Unless more evidence comes to light, therefore, the Burman drawing could well be accepted as the type. It was apparently prepared from an Indian specimen.

The young plants are used as a pot-herb in the eastern Transvaal.



MAP 19.— * *Corchorus tridens*
● *Corchorus confusus*
⊙ *Corchorus confusus* and *C. tridens*

4. *Corchorus confusus* Wild in Bothalia 7: 422 (1960); F.Z. 2,1: 86 (1963); Wild & Gonçalves in F.M. 28: 61 (1969); Ross, Fl. Natal 240 (1972). Type: Transvaal, Kruger National Park, Codd & De Winter 4960 (K, holo.!; PRE!).

C. serrifolius Burch. var. *lancifolius* Szyszyl., Polypet. Thalam. Rehm. 61 (1887), pro parte quoad specim. Rehm 4200 (BM; K), nom. nud.

C. trilocularis sensu Burtt Davy, Fl. Transv. 1: 257 (1926), pro parte excl. specim. Thorcroft 2058 (K!) et Nelson 381 (K!).

Perennial herb with prostrate or spreading branches up to 0,6 mm long; rootstock woody, branchlets, at least when young, with a spreading pubescence not confined to one side of the stem. *Leaf-blade* up to 70 × 26 mm, narrowly lanceolate to ovate, apex acute or subobtusely, base rounded or slightly cordate, sometimes with a pair of setaceous basal lobes, margin crenate or crenate-serrate, pilose on both sides especially on the nerves, hairs not tubercle-based, strongly 3-nerved from the base; petiole up to 8 mm long, setulose-pilose on all sides; stipules up to 6 mm long, setaceous, pubescent. *Inflorescence* of small (1–) 2–3-flowered cymes opposite the upper leaves; peduncles 4–25 mm long, with a patent pubescence on all sides; pedicels

similar, up to 8 mm long; bracts setaceous, similar to the stipules. *Sepals* up to 10 × 1,5 mm, linear-lanceolate to narrowly lanceolate, apex acuminate, setulose-pilose outside. *Petals* yellow, slightly shorter than the sepals, oblanceolate to obovate, with a short basal claw ciliate on the margin. *Androgynophore* about 0,5 mm long, extended above into a slightly undulate, glabrous annulus. *Stamens* filamentous, about 50. *Ovary* trigonously cylindrical, densely pubescent; style about 2,5 mm long, slender, glabrous. *Capsule* 25–50 mm long, on a straight fruiting pedicel, trigonous, undivided at the apex, usually scabrous on the angles or hispidulous; valves hollowed out to receive the seeds within; seeds numerous, dark brown to grey, about 2 × 1,2 mm. Fig. 4: 3.

A species common on koppies or in lowveld bush on sandy or basaltic soils. Known from the Transvaal, Natal, north-eastern Cape and Swaziland, and also in Mozambique and Zimbabwe. Map 19.

Vouchers: Galpin 577; 9661; M577; Strey 9099; Tyson 1413.

This species has been much confused in herbaria with the widespread introduced annual weed *C. trilocularis* (no. 2) but it cannot be included with this species since it is a perennial. It is possibly of hybrid origin with *C. asplenifolius* (below) as one parent and *C. trilocularis* (no. 2) as the other.

5. *Corchorus asplenifolius* Burch., Trav. 1: 400 (1822); Harv. in F.C. 1: 229 (1860); Szyszyl., Polypet. Thalam. Rehm. 60 (1887); Burtt Davy, Fl. Transv. 1: 257 (1926); Wild in F.Z. 2,1: 85 (1963); Wild & Gonçalves in F.M. 28: 60 (1969); Ross, Fl. Natal 240 (1972). Type: Cape Province, Vaal River, Burchell 1737 (K, holo.!).

C. serrifolius Burch., l.c. 537 (1822) (as '*serraefolius*'); Harv. in F.C. 1: 229 (1860); Szyszyl., l.c. 60 (1887); Burtt Davy, l.c. 257 (1926). Type: Cape Province, Asbestos Mts, Burchell 1962 (K, holo.!).

C. serrifolius var. *lancifolius* Szyszyl., l.c. 61 (1887), nom. nud.

—var. *linearifolius* Szyszyl., l.c. 61 (1887), nom. nud.

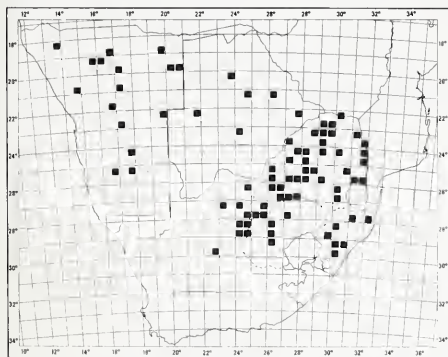
C. arenicola Hochr. in Annu. Conserv. Jard. bot. Genève 18: 125 (1914); R.A. Dyer in Kew Bull. 1932: 154 (1932). Type: Cape Province, Litakun, Lemue (G, holo.!; PRE!).

Perennial herb with prostrate or suberect annual stems from a woody rootstock; stems glabrous or with a line of short curly hairs on one side only or with spreading hairs all round the stem as well as the line of short curly hairs. *Leaf-blade* 15–80 × 2–15 mm, lanceolate, oblong-lanceolate, narrowly oblong or almost linear, apex acute or subacute,



FIG. 4.-1, *Corchorus asplenifolius*, rootstock with flowering and fruiting twig, $\times 1$ (Acocks 1583). 2, *Corchorus trilocularis*, fruit, $\times 1$ (Ward 329). 3, *Corchorus confusus*, fruit, $\times 1$ (Jenkins 6727). 4, *Corchorus olitorius*, fruit, $\times 1$ (Codd 4130). 5, *Corchorus junodii*, fruit, $\times 1$ (Gerstner 4782). 6, *Corchorus sulcatus*, fruit, $\times 1$ (Zwanziger 859). 7, *Corchorus schimperi*, fruit, $\times 1$ (Meeuse 10645). 8, *Corchorus kirkii*, fruit, $\times 1$ (Meeuse 10240). 9, *Corchorus merxmuelleri*, fruit, $\times 1$ (Giess, Volk & Bleissner 6228). 10, *Corchorus tridens*, fruit, $\times 1$ (De Winter & Wiss 4535).

rounded or broadly cuneate at the base, margin dentate-crenate or serrate, toothing very variable in size, sometimes irregular or biseriate and from very coarsely to rather finely toothed, basal setae absent, glabrous on both sides or sparsely to densely hispid with tubercular-based hairs; petiole up to 10 mm long, pubescent at least on the upper side; stipules up to 10 mm long, setaceous, setulose-pubescent. *Inflorescence* of single 1–3-flowered cymes opposite or subopposite the upper leaf axils; peduncle obsolete or up to 4 mm long, pubescent or glabrous; pedicels similar, up to 5 mm long; bracts about 2.5 mm long, setaceous, pubescent. *Sepals* 6–10 mm long, linear to linear-oblongate, glabrous on both sides or setulose-pubescent at the back, acuminate but not caudate at the apex, not keeled. *Petals* yellow, as long as the sepals, oblongate to obovate, with a basal claw about 0.75 mm long and with ciliate margin. *Androgynophore* about 0.3 mm tall, extended above into a slightly undulate annulus. *Stamens* filamentous, very numerous. *Ovary* trigonously subcylindric, very shortly setulose-pubescent, 3-locular; style 2–7 mm long, glabrous. *Capsule* 20–30 mm long, many-seeded, often on rather twisted or curved pedicels and therefore variable in its presentation, subcylindric not 3-angled, sparsely setulose-scabrid, attenuated to a blunt, undivided apex; seeds dark brown, $1.3\text{--}2 \times 0.75\text{--}1.0$ mm, shortly cylindric. Fig. 4: 1.



MAP 20.— *Corchorus asplenifolius*

This species is one of those which, without protection, are regularly burnt down to ground level in the dry season. It occurs in open woodland or bushland and at the margins of vleis. Known from the eastern and north-western Cape, Natal, Orange Free State, Transvaal and South

West Africa/Namibia. Also recorded from Mozambique, Zambia, Zimbabwe and Botswana. Map 20.

Vouchers: *Acocks* 1445; 10837; 18132; *Galpin* 6483; 13508; *Schlechter* 3586.

An extremely polymorphic species but all the variations intergrade so freely that it is not possible to divide it into satisfactory varieties. As regards pubescence, for instance, every stage exists between the form with numerous bulbous-based hairs on the leaves, represented by the type of *C. arenicola*, and the quite glabrous leaves of the type of *C. serrifolius*. See also notes under *C. confusus* (no. 4).

6. *Corchorus psammophilus* Codd in *Bonthalia* 14: 221 (1983). Type: Transvaal, Nylstroom District, 5 km N of P.O. Ons Hoop, Codd 8460 (PRE, *holo.*!).

Perennial herb with several prostrate, slender, simple or sparingly branched, villous stems 0.3–0.6 m long, radiating from a slender woody tap-root. *Leaf-blade* $30\text{--}45 \times 15\text{--}20$ mm, ovate-oblong to broadly elliptic, strigose on both surfaces, nerves prominent below, apex rounded, base rounded to truncate, margin minutely crenulate; petiole 3–6 mm long, pilose. *Inflorescence* subsessile to shortly pedunculate, 1–3-flowered, subopposite the leaves; pedicels 6–8 mm long, recurved, pilose; bracts 4–5 mm long, setaceous. *Sepals* $7\text{--}9 \times 1.5$ mm, narrowly lanceolate, acuminate, villous without. *Petals* yellow, $6\text{--}8 \times 3\text{--}5$ mm, oblongate to obovate, shortly clawed. *Androgynophore* 0.5 mm tall. *Stamens* numerous; filaments about 4 mm long. *Ovary* narrowly ellipsoid, 3-locular, densely strigose; style 7 mm long; stigma fimbriate. *Capsule* $18\text{--}25 \times 2$ mm, subcylindric, somewhat arcuate, strigose; seeds numerous, blackish, 1.75×1 mm, oblong-cylindric.

Known at present only from the north-western Transvaal, in open *Terminalia sericea* veld on sandy flats. Map 21.

Vouchers: Codd 8460; Smook 4320a.

It differs from *C. asplenifolius* in the ovate-oblong to broadly elliptic leaves with finely crenulate margins and the prominent veins on the under-surface.

7. *Corchorus schimperi* Cufod. in *Bull. Jard. bot. État Brux.* 28: 516 (1958); Wild in *F.Z.* 2,1: 87 (1963); Roessl. in *F.S.W.A.* 81: 4 (1969); Ross, *Fl. Natal* 240 (1972). Type: Ethiopia, *Schimper* s.n. (P, *holo.*; K!).

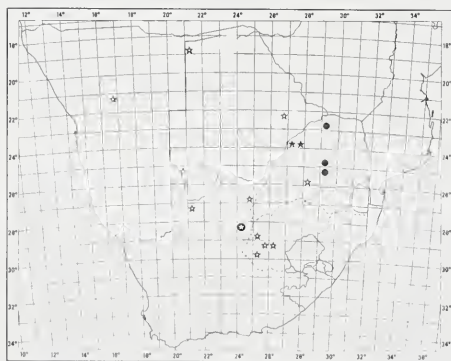
C. muricatus Hochst. ex A. Rich., *Tent. Fl. Abyss.* 1: 81 (1847); Mast. in *F.T.A.* 1: 263 (1868); *nom. illegit.*, non *C. muricatus* Schumacher & Thonn. Type: as above.

Annual herb branching from low down, at first erect but later branches often pros-

trate; branches with a line of short curly hairs on one side. *Leaf-blade* 10–50 × 7–15 mm, lanceolate or oblong, apex rounded, base broadly cuneate or rounded, sometimes rather asymmetric, margin crenate or crenate-serrate, sparsely pilose at least on the nerves beneath and at the margins; petiole up to 7 mm long, pubescent on the upper side; stipules 2–3 mm long, setaceous, sparsely ciliate-pubescent. *Inflorescences* of 1–3-flowered extra-axillary fascicles, the peduncles usually being obsolete; pedicels up to 2 mm long, pubescent, twisted in fruit; bracts 1–2 mm long, setaceous. *Sepals* about 3–5 mm long, linear to very narrowly elliptic, shortly acuminate at the apex, pubescent on the back. *Petals* yellow, as long as the sepals, narrowly obovate to obovate; basal claw, if present, minutely ciliolate, shorter than 0,5 mm. *Androgynophore* and annulus very minute, about 0,25 mm tall. *Stamens* filamentous, numerous. *Ovary* trigonously cylindric, 3-locular, very minutely setulose-pubescent; style 2,5 mm long, glabrous, very slender. *Capsule* up to 25 mm long, straight or often curved, trigonous, with the angles muricate or sharply toothed, 3-valved, with many seeds; beak very short, undivided and blunt; seeds about 1,4 × 0,75 mm, subcylindric, dark brown. Fig. 4: 7.

Commonly a weed of cultivation but also recorded from vleimagrins. Recorded from the Transvaal, Orange Free State, Natal, northern Cape Province and in Zambia, Zimbabwe and Ethiopia. Map 21.

Vouchers: *Acocks* 1451; *Leistner* 1843; *Meeuse* 10645.



MAP 21. — * *Corchorus psammophilus*
 ☆ *Corchorus schimperi*
 ● *Corchorus sulcatus*
 ○ *Corchorus sulcatus* and *C. schimperi*

This is an inconspicuous plant and the considerable discontinuity in its distribution is probably only apparent and will disappear with more careful collecting.

8. *Corchorus sulcatus* Verdoorn in *Bothalia* 10: 81 (1969). Type: Transvaal, Potgietersrus, 16 km S. of Roedtan, *Codd & Verdoorn* 10376 (PRE, holo.!).

Perennial with woody rootstock; branches prostrate, usually under 0,3 m long, sericeous or sericeo-villous. *Leaf-blade* 10–32 × 4–16 mm, ovate, subrotund or narrowly ovate-oblong, margin crenate-dentate, lateral nerves deeply impressed on the upper surface, prominent beneath, sulcate between the lateral nerves, upper surface sericeous or sparsely villous becoming almost glabrous, lower surface densely and persistently appressed sericeo-villous; petiole 2–10 mm long, sericeous or villous. *Inflorescence* of small 1–3-flowered cymes subopposite the leaves, subsessile or with a peduncle up to 1,5 mm long; pedicels 1–4 mm long, villous, strongly recurved at fruiting stage; bracts narrowly linear, acuminate, sparsely pilose. *Sepals* about 6 × 1,75 mm, narrowly lanceolate-elliptic, pilose without. *Petals* yellow, about as long as the sepals, obovate, shortly clawed, claw very sparsely and minutely ciliate. *Androgynophore* about 0,75 mm long. *Stamens* numerous; filaments about 4 mm long; anthers 0,75 mm long. *Ovary* 3-locular, narrowly oblong-elliptic, densely strigose; style about 4 mm long, more or less glabrous. *Capsule* 15–25 mm long, 3-valved; pedicels strongly recurved, about 4 mm long, persistent. Fig. 4: 6.

Locally frequent on limestone formations in dry bushveld. Recorded from northern Cape and central Transvaal. Map 21.

Vouchers: *Acocks* 1445; 23359; *Verdoorn* 2511.

C. sulcatus approaches the variable species *C. asplenifolius* (no. 5) in the procumbent habit and the similarly shaped capsules borne on strongly recurved pedicels. It differs in the pubescence of the under-surface of the leaves and the broader leaf-blades.

9. *Corchorus pinnatipartitus* Wild in *Bothalia* 7: 423 (1960). Type: Cape Province, Kuruman Division, Cardington, *Esterhuysen* 2188 (K, holo.!, BOL!; PRE!).

Small perennial with a woody rootstock; branches up to 0,2 m long, suberect or somewhat trailing, glabrous except for a line of crisped hairs down one side of each internode. *Leaf-blade* up to 25 × 12 mm, narrowly oblong in outline but deeply pinnatipartite at least four-fifths of the way to the midrib,

sometimes somewhat palmately lobed at the base, lobes blunt or subacute, entire or sometimes with a supplementary side-tooth, leaf-apex rounded or subacute, base truncate or shallowly cordate, basal setae absent, glabrous on both sides or minutely and sparsely puberulent on the midrib below, very minutely punctulate on both sides; petiole up to 7 mm long, with a line of hairs on the upper side; stipules about 2 mm long, lanceolate with a subulate apex. *Inflorescence* of 1–3-flowered fascicles opposite the leaves or occasionally with very short peduncles; pedicels up to 10 mm long, slender, puberulous; bracts about 1 mm long, setaceous. *Sepals* often purplish or pinkish, about 7 mm long, oblanceolate, apex subacute or acute, glabrous. *Petals* yellowish or tinged pinkish purple, as long as the sepals, narrowly obovate; claw minutely ciliolate on the margin. *Androgynophore* 0,25 mm tall, extended above into a very narrow annulus. *Stamens* filamentous, very numerous. *Ovary* trigonously ellipsoid, 3-locular, very minutely glandular-papillose; style about 3 mm long, slender. *Capsule* about 20×2 mm, subcylindric, often on a twisted or recurved pedicel, sparsely glandular, blunt and undivided at the apex; seeds numerous, dark brown, $1,5 \times 1$ mm, subcylindric, angular.

Confined, so far as it is known at present, to the Griqualand West area in Cape Province, apparently common on limestone soils. The flowers open in the afternoon. Map 22.

Vouchers: Brueckner 154; Esterhuysen 2251.

10. *Corchorus longipedunculatus* Mast. in F.T.A. 1: 262 (1868); Burtt Davy, Fl. Transv. 1: 257 (1926); Wild in F.Z. 2,1: 86 (1963); Wild & Gonçalves in F.M. 28: 62 (1969); Gonçalves in Garcia de Orta, sér. Bot. 4,1: 78 (1979). Type: Mozambique, opposite Sena, Kirk s.n. (K, holotype!).

Annual herb up to 0,6 m tall, branching low down with many ascending, slender stems; branchlets angular or compressed at first, glabrous. *Leaf-blade* $10\text{--}80 \times 2\text{--}3,5$ mm, linear, acuminate at the apex, cuneate or narrowly truncate at the base, margin denticulate, glabrous or minutely setulose-pubescent on the midrib below; petiole up to 5 mm long, very shortly pubescent on the upper side; stipules $5\text{--}7$ mm long, setaceous, glabrous. *Inflorescence* of 1–3-flowered cymes opposite the upper leaves; peduncles up to 20 mm long, hair-like, glabrous; pedicels similar, up to 10 mm

long; bracts 2–3 mm long, setaceous, glabrous. *Sepals* about 4 mm long, very narrowly elliptic to linear, caudate or setaceous at the apex, glabrous, margins somewhat inrolled. *Petals* yellow, 3–4 mm long, linear to very narrowly oblanceolate, not clawed or ciliate at the base. *Androgynophore* and annulus almost or quite obsolete. *Stamens* about 12, filamentous. *Ovary* trigonously subcylindric, 3-locular, very minutely setulose-pubescent; style 1–1,5 mm long, glabrous. *Capsule* 20–50 mm long, many-seeded, trigonous, with an undivided beak, narrowed to the base, glabrous, 3-valved, valves hollowed out to receive the seeds within; seeds brown, about $0,8 \times 1,5$ mm, subcylindric.

Recorded from Transvaal and adjacent parts of Zimbabwe and Mozambique. Map 22.

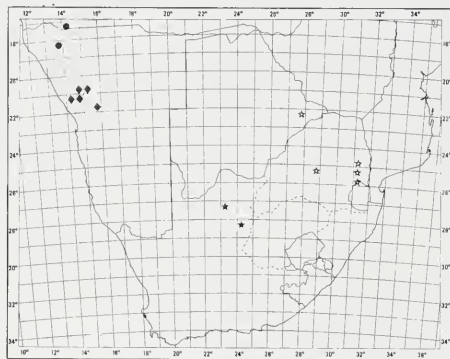
Vouchers: Acocks 16721; Codd 5248; Smuts & Gillett 2037.

This is a most characteristic but inconspicuous plant and it is probably commoner and more widely distributed than the known number of gatherings indicates.

11. *Corchorus angolensis* Exell & Mendonça in Bolm Soc. broteriana, sér. 2, 25: 103 (1951); C.F.A. 1,2: 240 (1951); Roessl. in F.S.W.A. 81: 1 (1969). Type: Angola, Huila, Ungueria, Exell & Mendonça 2488 (BM, holotype; COI!).

Fine-stemmed shrublet up to about 0,6 m tall; stems finely pubescent on all sides. *Leaf-blade* up to 70×28 mm, membranous, lanceolate, ovate-lanceolate, oblong-lanceolate, or narrowly lanceolate, apex acute, base obtuse to slightly cordate, margin serrate or more rarely serrate-crenate, glabrous or sparsely pilose on both sides; petiole 5–25 mm long, slender, pubescent; stipules about 4 mm long, filiform, pubescent. *Inflorescence* of small (1–) 2–5-flowered cymes opposite the upper leaves; peduncles up to 25 mm long, pubescent; pedicels similar, up to 8 mm long; bracts filiform, similar to the stipules. *Sepals* $10 \times 2,5$ mm, lanceolate, apex caudate, pubescent outside. *Petals* $8 \times 4,5$ mm, narrowly obovate, with a short basal claw ciliate on the margin. *Androgynophore* about 0,5 mm long, extended above into a puberulent or glabrous annulus. *Stamens* numerous, filamentous. *Ovary* 3-locular, trigonously cylindric, pubescent; style about 3 mm long, slender, glabrous. *Capsule* 30–60 mm long, on a straight fruiting pedicel, trigonous, undivided at the apex; valves glabrous when

mature; seeds numerous, dark grey, 1.5–2.2 × 0.9–1.2 mm.



MAP 22.— * *Corchorus pinnatipartitus*
 • *Corchorus longipedunculatus*
 ◆ *Corchorus angolensis*
 ◇ *Corchorus merxmülleri*

A species of dry woodland or river banks. Recorded in South West Africa/Namibia only from the Kaokoland so far but also widespread in Angola. Map 22.

Vouchers: *De Winter & Leistner* 5232.

Very near *C. confusus* (no. 4) but much less variable than that species and with a very characteristic, thin-stemmed, bushy habit.

12. *Corchorus merxmülleri* Wild in *Bothalia* 7: 423 (1960); *Roessl. in F.S.W.A.* 81: 3 (1969). Type: South West Africa/Namibia, Otjihorongo Reserve, Omaruru, *Merxmüller & Giess* 1620 (M, holo.; PRE!).

Shrub about 2 m tall with numerous spreading branches; young branchlets grey-tomentellous, later glabrescent with a brown bark. *Leaf-blade* up to 22 × 16 mm, ovate, apex acute, base shallowly cordate, margin coarsely serrate-dentate, greyish tomentellous and stellately pubescent on both sides; petiole up to 6 mm long, greyish tomentellous on all sides; stipules about 2 mm long, subulate, greyish tomentellous. *Inflorescence* of 1–2-flowered cymes opposite the upper leaves; peduncles up to 2 mm long, greyish tomentellous; pedicels up to 5 mm long, greyish tomentellous; bracts 1.5 mm long, subulate, greyish tomentellous. *Sepals* 5–6 × 0.75–1.0 mm, narrowly oblanceolate, apex long acuminate, slightly keeled at the back, greyish tomentellous outside, glabrous inside. *Petals* yellow, 9 × 4.5 mm, narrowly obovate, with a short basal claw minutely ciliate on the margin. *Androgynophore* about 0.5 mm long,

extended above into a puberulent annulus. *Stamens* numerous, filamentous. *Ovary* 3-locular, trigonously cylindric, very shortly tomentellous; style 4 mm long, slender, glabrous. *Capsule* 30–45 × 15 mm, subcylindric, slightly torulose, with an obtuse rostrate apex about 2 mm long; valves greyish tomentellous outside at first, sparsely stellate-puberulent later; seeds numerous, brown, about 2 × 1 mm. Fig. 4: 9.

Recorded only from the northern areas of South West Africa/Namibia and is reported to occur on the north sides of koppies. Map 22.

Vouchers: *De Winter & Hardy* 8206; 8217; *Giess* 3978.

An unusually large plant for a *Corchorus* sp.

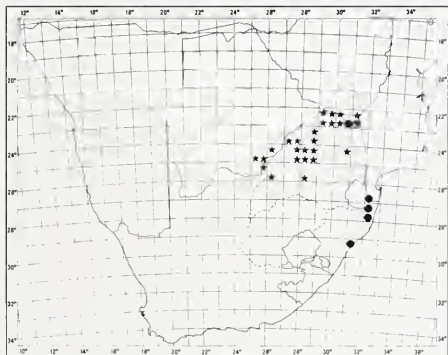
13. *Corchorus velutinus* Wild in *Bolm Soc. Broteriana* sér. 2, 31: 92 (1957); *Wild in F.Z.* 2,1: 90 (1963); *Wild & Gonçalves in F.M.* 28: 65 (1969). Type: Transvaal, *Acocks* 16767 (K, holo.; PRE!).

Small shrub up to 1 m tall, all parts except the corolla with a short, dense, velvety, greyish yellow indumentum, the old stems becoming glabrous finally with a brownish bark. *Leaf-blade* 20–50 × 6–25 mm, narrowly oblong or narrowly elliptic, submucronate and obtuse at the apex, widely cuneate at the base, dentate or repand-dentate at the margin, with 13–15 pairs of rather inconspicuous nerves which are slightly immersed above and slightly raised below; petiole about 10 mm long; stipules 1–2 mm long, caducous, subulate. *Inflorescence* of small, 3–11-flowered cymes opposite the upper leaves or borne some distance from the nodes; peduncles up to 15 mm long; pedicels similar, up to 15 mm long; bracts about 2 mm long, subulate. *Sepals* up to 10 × 2.5 mm, narrowly elliptic or very narrowly elliptic, somewhat keeled dorsally, caudate at the apex (thus rendering the bud apiculate at its apex), velvety outside, glabrous within. *Petals* yellow, up to 10 × 3 mm, narrowly oblanceolate-oblong, with a small basal claw about 1.2 mm long and with a very shortly stellately pubescent margin. *Androgynophore* 0.5 mm tall, with an annulus above. *Stamens* numerous, filiform. *Ovary* 3-locular, cylindric, shortly stellately villose; style about 4 mm long, glabrous. *Capsule* cylindric, not beaked, sometimes slightly torulose, greyish or yellowish velvety-tomentose with longer tufted hairs scattered among the shorter stellate indumentum; seeds numer-

ous, about 2.5×1.2 mm, irregularly ellipsoid, very dark brown.

A species of dry deciduous woodland on sandy soils in the Limpopo valley. Occurs also in the adjacent parts of Zimbabwe and Mozambique. Map 23.

Vouchers: Codd 5346; Van der Schijff 1831; 2725.



MAP 23.— ▼ *Corchorus velutinus*
 ★ *Corchorus kirkii*
 ● *Corchorus junodii*
 ● *Corchorus junodii* and *C. velutinus*

14. *Corchorus kirkii* N.E.Br. in Kew Bull. 1908: 288 (1908); Weim. in Svensk bot. Tidskr. 30: 478, t.16 (1936); Wild in F.Z. 2,1: 89 (1963); Wild & Gonçalves in F.M. 28: 65 (1969). Syntypes: Mozambique, Tete, *Kirk* s.n. (K!); between Tete and Lupata, *Kirk* s.n. (K!).

C. hirsutus sensu Mast. in F.T.A. 1: 264 (1868).

C. pongolensis Burtt Davy & Greenway in Burtt Davy, Fl. Transv. 1: 37, 258 (1926); Weim. in Svensk bot. Tidskr. 30: 477, t.1 fig. a (1936). Type: Transvaal, Waterberg District, *Schlechter* 4265 (K, holo.!; PRE!).

Small shrub up to 2.5 m tall; branches densely greyish or yellowish tomentose. *Leaf-blade* 24–100 \times 8–27 mm, oblong to oblong-lanceolate, rounded or acute at the apex, rounded or broadly cuneate at the base, margin coarsely serrate, repand or finely serrate, thick-textured, densely grey-green or yellowish tomentose on both sides, nerves impressed above, somewhat prominent below; petiole up to 13 mm long, greyish or yellowish tomentose; stipules up to 5 mm long, subulate, tomentose on the back. *Inflorescence* of leaf-opposed 3–8-flowered cymes; peduncles up to 10 mm long but often much shorter, tomentose; pedicels similar, up to 3 mm; bracts up to 8 mm long, subulate, tomentose or pi-

lose on the back. *Sepals* up to 10 mm long, lanceolate-acuminate to linear, stellately pilose or tomentose on the back. *Petals* yellow, the same length as the sepals, narrowly obovate to linear-oblong, with a short basal claw ciliate on the margin. *Androgynophore* 0.4 mm long with an annulus above. *Stamens* 20–30, filiform. *Ovary* cylindric, 3- or occasionally 4-locular, many-seeded, densely stellately pilose; style about 2 mm long, glabrous. *Capsule* up to 30 mm long, not beaked, narrowly ovoid to linear-cylindric, densely clothed with soft, stellately hairy bristles; seeds brown, about 2.5×1.3 mm, compressed-ellipsoid. Fig. 4: 8.

A species of open woodland which often occurs on the slopes of rocky hills. From the Transvaal to Zimbabwe, Mozambique and Botswana. Map 23.

Vouchers: Codd & Dyer 3857; 9186; Meeuse 9330; Story 1841.

The extreme form, represented by the type of *C. pongolensis*, would at first sight appear to be distinct. Its characteristic, greyish, tufted indumentum, its narrowly ovoid fruits, bracts usually longer than the flowers and leaves wider in proportion to their length, all seem to separate it from *C. kirkii* with a smoother, velvety, yellowish indumentum, cylindric fruits and bracts shorter than the flowers. When the full range of material is examined, however, each one of these characters of typical *C. pongolensis* can be found in what is otherwise typical *C. kirkii*, uncorrelated with the remainder. What is more, there is no phytogeographical segregation of the two entities. Plants with the elongate fruits of *C. kirkii* are found near the type locality of *C. pongolensis* in the Transvaal and plants with the indumentum of the latter, but agreeing otherwise with *C. kirkii*, are found on the northern borders of Zimbabwe, not far from the type locality of *C. kirkii*. It is possible that two distinct species once existed but owing to the overlapping of their two ranges of distribution widespread hybridisation took place and a hybrid swarm was produced with a continuous range of variation between the two extremes.

The bark of this plant is occasionally used for basket making.

15. *Corchorus junodii* (Schinz) N.E.Br. in Kew Bull. 1908: 287 (1908); Weim. in Svensk bot. Tidskr. 30: 480, t.1, fig. d (1936); Wild in F.Z. 2,1: 90 (1963); Wild & Gonçalves in F.M. 28: 66 (1969); Ross, Fl. Natal 240 (1972). Type: Mozambique, Delagoa Bay, *Junod* s.n. (Z, holo.!).

Triumfetta junodii Schinz in Mém. Herb. Boissier 10: 49 (1900). Type: as above.

C. discolor N.E.Br. in Kew Bull. 1908: 287 (1908). Type: Natal, *Medley Wood* 10186 (K, holo.!).

Small shrub up to 1.6 m tall; young branches greyish pubescent, older branches glabrescent and brown. *Leaf-blade* 15–60 \times

6–20 mm, lanceolate, oblong or elliptic, rounded or acute at the apex, rounded or broadly cuneate at the base, margin coarsely dentate, shortly and densely greenish tomentose or glabrescent above, densely whitish or yellowish tomentose below; petiole up to 10 mm long, densely grey-pubescent; stipules 2–4 mm long, subulate, densely grey-pubescent. *Inflorescence* of leaf-opposed 3–5-flowered cymes; peduncles up to 10 mm long, densely grey-pubescent; pedicels similar, up to 5 mm long; bracts about 3 mm long, subulate, grey-pubescent. *Sepals* up to 10 mm long and with a caudate apex, up to 4,5 mm long but often less, linear, densely pubescent outside, glabrous within. *Petals* yellow, 7–8 mm

long, oblanceolate, with a basal claw up to 1 mm long with ciliolate margin. *Androgynophore* 0,5 mm long with a well developed annulus above with somewhat undulate margin. *Stamens* numerous, filiform. *Ovary* ovoid, densely pubescent, 5-locular, ovules very numerous; style 3–4 mm long, glabrous. *Cap-sule* up to 20 × 15 mm including the bristles, ovoid with a dense covering of rather stiff, stellately plumose bristles up to 5 mm long; seeds brown, 2 × 1,3 mm, irregularly ellipsoid. Fig. 4: 5.

Confined to Natal, the Transvaal and the southern provinces of Mozambique. Map 23.

Vouchers: *Codd* 5944; 7039; *Medley Wood* 10186; *Schlieben* 9314.

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